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WAR DEPARTMENT
OFFICE OF THE ADJUTANT GENERAL

PROVISIONAL
Drill and Service Regulations for Field Artillery
(Horse and Light)
1916

▽

VOLUME I
Parts I, II, and III

CORRECTED TO APRIL 15, 1917
(Changes, No. 1)

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GOVERNMENT PRINTING OFFICE
1917

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WAR DEPARTMENT,

WASHINGTON, *April 15, 1917.*

The following provisional system of Drill and Service Regulations for Field Artillery (Horse and Light), 1916, is approved and herewith published for the information and government of the Army of the United States.

BY ORDER OF THE SECRETARY OF WAR:

H. L. SCOTT,
Major General, Chief of Staff.

OFFICIAL:

H. P. McCAIN,
The Adjutant General.

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PART I.

GENERAL PRINCIPLES AND DEFINITIONS.

CHAPTER I.—GENERAL PRINCIPLES.

SECTION I.—INSTRUCTION.

Object of the Instruction.

1. The reason for the existence of Field Artillery is its ability to assist the other arms, especially the Infantry, upon the field of battle.

The degree to which the Field Artillery prepares itself to render this assistance is, then, the measure of its training. No refinements of drill-ground instruction or other minor details must be allowed to obscure this definite object or to impede progress toward its attainment.

2. To enable it to render effective assistance upon the battlefield Artillery must be able, first, to march rapidly and in good order and to establish itself, promptly and without confusion, in such positions as will best utilize the available terrain; second, to deliver an effective and overpowering fire upon any designated part of the enemy's position.

Thorough training in marching, camping, reconnaissance and communication service, fire discipline, conduct of fire and fire direction, carried out over varied country, is essential to the attainment of these qualifications.

3. An additional object of instruction is to develop resourcefulness, initiative, and self-reliance on the part of field artillerymen of all grades.

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4. These regulations prescribe a method of training in the ordinary duties pertaining to the service of Field Artillery. The personnel must be so thoroughly drilled that in the excitement of action the duties will be performed as a matter of second nature.

The regulations also outline general principles according to which Field Artillery is to be handled and fought. A guide is thus furnished as to the best way of dealing with the usual problems which arise. But every problem which arises in service has its own best solution, and this solution must be evolved by the officer on the spot. His success will depend upon the extent to which he has prepared himself by previous thought and study and by previous practice in the solution of similar problems.

5. Instruction in peace must therefore be conducted with a view, first, of drilling the personnel thoroughly in their habitual duties; second, of affording officers and men practice and experience in dealing with the situations and difficulties apt to arise in campaign.

6. Each regimental, battalion, and battery commander will prepare a monthly program of instruction for his unit. In the preparation of such programs the purpose of all Field Artillery instruction (1) will be the prime consideration.

In conformity with such programs solutions of practical problems involving tactical situations with appropriate units should be required. Practice by officers in making proper dispositions to meet the requirements and developments of tactical situations is the best training for service in war. Thorough knowledge of their own arm is not sufficient for officers of Field Artillery; they must also know the manner in which the other arms march and the tactical principles which guide those arms in battle.

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Officers should be trained to think quickly and logically and to asume responsibilities unhesitatingly. Errors of judgment should always be pointed out by the proper commanders; but such errors should not be criticized harshly, as such criticism causes timidity and consequent inaction, which are generally more productive of harm than is misdirected zeal.

7. It is made the duty of all Field Artillery commanders to see that instruction is conducted in accordance with the principles and that the means employed are in conformity with the spirit of the regulations, but in the application of the principles to the solution of practical problems the methods prescribed are to be taken as guides only. Great latitude should be allowed in adapting these methods to the peculiar conditions of different cases, and subordinates should be encouraged in every way possible to exercise their skill and ingenuity in solving the problems which present themselves in service.

On the one hand, uniformity of mechanisms and commands is requisite in order that the efficiency of instructed personnel may be uninterrupted, due to the differing opinions of changing unit commanders, and that reserves returning to the ranks may fulfill important duties from the beginning of their renewed service. On the other hand, no progress toward improved methods is possible without study and test of suggested changes and variations.

To secure the objects first mentioned the methods, mechanisms, and commands prescribed herein will be habitually practiced. To develop ideas regarding improvements of matériel, ammunition, and methods, officers will be encouraged to investigate, to develop, and to report upon suggestions from any source for the improvement of efficiency, with a view of their adoption by the proper authority. But such investigations will not be permitted to interfere with proficiency in prescribed methods.

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Sequence and Methods of Instruction.

8. A progressive order will be followed in all Field Artillery instruction. The annual course of instruction should commence with the smallest unit and proceed to the larger ones in succession, culminating in the field maneuvers.

9. The efficiency of an instructor is measured not only by his knowledge of his subject but by his ability to hold the attention of those whom he is endeavoring to instruct. When the men lose interest and their attention wanders, continuation of the exercise is useless. Hence, short and frequent drills are better than long ones, and effort must be made so to vary the exercises as to avoid monotony.

10. The instructor will always maintain a military bearing and, by a quiet, firm demeanor, set a proper example to the men. Faults should be corrected gradually, without nagging or shouting.

11. Officers and noncommissioned officers of each grade will be frequently practiced in the duties of the next higher grade or command.

12. Thorough training of the individual soldier is the basis of efficiency. Great precision and attention to detail are essential in this instruction in order that the soldier may acquire that habit of implicit obedience to orders and of accurate performance of his individual duties which is indispensable in combined training.

If all the individuals of a battery, including the officers, are thoroughly trained, a comparatively short period of work in formal battery drills, occupation of positions, marches, etc., with the battery as a whole will suffice to produce an efficient organization for field service. On the other hand, no amount of drill of a battery as a whole is likely to produce an efficient organization if its members are not thoroughly instructed as individuals.

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Similarly, comparatively little work of a battalion as a whole is necessary if the batteries and the battalion headquarters detail have been thoroughly trained in their individual duties. Preliminary battalion instruction may be advantageously conducted by battalion commanders using only the battalion headquarters detail, the battery commanders, and their details. But it must be borne in mind that the battalion is the usual tactical unit of Field Artillery, and that its maximum efficiency can be secured only by constant exercise of all its parts working in conjunction.

13. Instruction of the gun squad as a whole will not be taken up to the exclusion of individual training until the men are thoroughly proficent in the nomenclature and operation of all those parts of the guns, instruments, and other matériel which the cannoneers are called upon to handle in actual firing.

Drivers will be thoroughly instructed in equitation before taking up drill with pairs. Similarly, they must understand the principles of managing the off horse and be able to handle the pair before taking up the team hitched.

14. So far as concerns the enlisted personnel, the most important element of a battery's efficiency on the battle field is its fire discipline. The basis of good fire discipline, as of all other matters, **is thorough individual instruction**, and it can only be secured and maintained by constant and vigorous drills and other exercises. To this end gun squads will be given daily such exercises as will serve to fix their attention and cultivate their dexterity.

Efficient gun squads can not be improvised. The duties of cannoneers and the manual dexterity required for their performance are easily forgotten. So long as there are drivers for the gun sections, each battery must constantly maintain four thoroughly instructed gun squads.

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15. During drill hours instruction will be so arranged that neither men nor horses will be permitted to remain idle.

16. As soon as practicable after the pieces, caissons, or other Artillery matériel have been used, they will be properly cleaned, put in order, and inspected by an officer. When stables are held after drill, the gunners and such other men as may be needed will be detailed for the purpose of cleaning and placing the Artillery matériel in proper order, and will clean the same during stables.

17. Both morning and afternoon hours will be utilized for instruction, sufficient time being allowed for the police of barracks, stables, and grounds, and for the care of the personal equipments and effects of the men. All work should normally be done under the immediate direction of noncommissioned officers and under the supervision of officers.

Training of Officers.

18. Responsibility for the training of officers rests upon regimental and battalion commanders.

19. Among the requisites essential in the training of a Field Artillery officer are the following:

Practical understanding of the functions of all parts of the matériel. In addition, battery officers must be able to dismount and to assemble each part of the mechanism without reference to handbooks and without assistance other than the necessary labor and to perform with skill all the duties required in the qualification of gunners.

Thorough knowledge of horses under the saddle and in draft; how best to ride, control, and manage them in order to conserve their strength; how to train, care for, and condition them in order to secure obedience, handiness, and endurance.

All officers should be familiar with the theory of probability and the laws of error and should be required from time to time

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to solve problems given them by superior commanders. These problems should be framed to illustrate points of interest and useful application. Care should, however, be taken to impress all officers with the fact that theoretical knowledge is of very little value unless they are able to apply it practically.

Expertness in the reconnaissance, selection, and occupation of positions.

Whenever a position is to be chosen, a definite tactical situation should be stated that will invariably recognize the primary purpose of Field Artillery to be the assistance of the other arms.

Facility in the observation of fire and the correction of errors: High efficiency can be obtained only by training at service practice, but valuable elementary instruction is possible through the use of subcaliber ammunition, smoke bombs, the terrain board, the blackboard, and simulated fire.

Training of Noncommissioned Officers.

20. Exceptional care and attention will be devoted by battery commanders to the selection and training of candidates for appointment as corporals and of corporals to fit them for duty as sergeants. In each battery a special course of instruction will be given by one of the lieutenants. This course will be considered the equivalent of the course in the noncommissioned officers' school.

21. The corporals and privates selected will be instructed according to a schedule submitted by each battery commander and approved by the regimental commander or by the senior Field Artillery officer present with the command.

22. The course for both selected privates and selected corporals should include such subjects as: Dismounted instruction to include all of Part II—Swimming; Drill in firing commands; The cannoneer; Care of matériel; Equitation; Care and man-

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agement of horses; The driver; Care of harness and saddlery; Castrametation; First aid; Personal hygiene; Care of clothing and equipment. In addition, the course for selected corporals will include such subjects as: Duties of chiefs of section on the march; in camp; in the firing battery; with respect to discipline and property responsibility.

Training and Inspection of Recruits.

23. All instruction of recruits will be by battery. When it is possible to do so, recruits will be assigned to batteries in detachments of not less than 30 men.

24. Every phase of the instruction of recruits will be under the immediate supervision of an officer. After the recruits have been under instruction a sufficient length of time to enable the battery commander to form an idea as to their capability they will be temporarily divided into classes of cannoneers and drivers. This division will be made permanent prior to the second inspection. In making this division the battery commander will consider the requirements of the service as well as the capabilities of the individual men.

25. Except in active operations or emergencies, recruits will not be placed on rosters for daily duties such as guard, fatigue, police, etc., until they are qualified for permanent assignment to duties in the sections. But such duties as guard, police, etc., will be made subjects of instruction.

26. To determine whether or not the recruits have been properly trained, two inspections will be held by the regimental commander, the battalion commander being present, or by the battalion commander in the absence of the regimental commander. When Artillery brigades are formed, the Artillery brigade commander will, when possible, be present at these inspections.

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The first inspection will include the subjects enumerated in paragraph 28. The second inspection will be held for cannoneers and drivers separately and will include the subjects enumerated in paragraph 29.

These inspections should be most thorough and should include everything prescribed by these drill regulations in the subjects enumerated. At the termination of each inspection, or at the end of each day when the inspection requires several days. a detailed critique will be held by the inspecting officer. All officers belonging to the battery whose recruits are being inspected will be present during the inspection and the subsequent critique. By means of this inspection Field Artillery commanders will be able to obtain a very great degree of uniformity in the instruction of the units of their command.

27. The first inspection will take place not less than three months nor more than four months after the recruits have joined the battery on a date to be designated by the regimental commander or senior Artillery officer present with the command.

28. The first inspection will be for all the recruits and will consist of a detailed examination and inspection in the following subjects:

1. Dismounted inspection under arms.
2. Manual of the pistol.
3. Setting up exercises to include all exercises prescribed in Recruit Instruction, Manual of Physical Training.
4. Swimming, if facilities are available.
5. Running one-half mile.
6. Customs and courtesies of the service.
7. Dismounted drill, to include the execution of each movement prescribed for the squad and for the battery dismounted.
8. Inspection of barracks or camp, the recruits standing by their beds with their equipment displayed.

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9. Inspection of all articles included in the field kit.

10. Packing; rolling the mounted and dismounted blanket roll; rolling the slicker.

11. Shelter-tent pitching.

12. Individual instruction as cannoneers, to include sufficient instruction to enable them to qualify as second-class gunners.

13. Drill of the gun squads in all the exercises preliminary to the service of the piece, to include the execution of each movement described.

14. Care of horses:

(*a*) Questions on the general rules and principles of feeding, watering, care, and grooming of horses.

(*b*) Grooming by detail of one horse by each recruit.

15. Equitation, to include the "Soldier mounted."

16. Care of leather, equipment as demonstrated by actually cleaning a saddle and bridle.

17. Fitting a saddle and bridle to a horse.

29. The second inspection will be held not less than five months nor more than six months after the recruits have joined the battery, on a date to be designated by the regimental commander or senior Artillery officer present with the command, and will include:

(A) For All Recruits.

1. Dismounted inspection under arms.

2. Setting-up exercises, to include all exercises described in Recruit Instruction, Manual of Physical Training.

3. Customs and courtesies of the service.

4. Dismounted drill, to include the execution of each movement described for the squad and for the battery dismounted.

5. Guard duty, to determine whether the recruit understands his duties as a sentinel.

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6. First aid; Hygiene; Care of the person.

7. Care and use of the pistol, to include the firing of two scores, slow fire, at 25 yards.

8. Pitching, striking, and packing battery tentage.

9. Inspection of clothing and equipment.

10. Individual cooking, to include the preparation of coffee, bacon, and potatoes.

(B) **For Cannoneers Only.**

1. Care, cleaning, and nomenclature of matériel.

2. Rolling cannoneer's rolls and packing them for transportation.

3. Elementary gunnery, to include determining whether the recruits thoroughly understand the principles, mechanisms, methods of fire, etc., given in firing instruction.

4. One battery problem involving the fire of service ammunition by gun squads the principal positions in which are filled by the recruits. If ammunition be not available, or if firing be impracticable, this subject will be replaced by drill in simulated fire.

5. Individual instruction as cannoneers, to include sufficient instruction to enable them to qualify as first-class gunners.

(C) **For Drivers Only.**

1. Nomenclature, cleaning, and fitting of harness.

2. Harnessing and unharnessing.

3. Rolling driver's rolls and packing equipment on the saddle.

4. Handling a single pair at the walk and trot in turns and about; increasing the gait; decreasing the gait; halts; and movements to the front from the halt.

5. Handling a pair in a team hitched, to include the execution at the walk and trot of all movements described in the "Battery mounted."

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6. Questions on the care of horses on the march and in camp, with especial reference to shoulders and backs, feeding and watering.

30. If the results of either of these inspections are unsatisfactory, the inspecting officer will require a further period of training at the termination of which another inspection will be held.

Miscellaneous Training.

31. While first place must be given to purely Artillery instruction, the personnel must also be thoroughly trained in all other duties which may be required of Field Artillery. Among the most important are those incident to the march and the camp. In beginning training in these duties it should be borne in mind that the principal object is instruction, not distance marched. The earlier marches should, therefore, be very short in order that the personnel may be in condition to profit by instruction in the care of animals and matériel, establishing camp, individual cooking, etc. Similarly, instruction in each of the several subjects should be deliberate in the beginning. Painstaking instruction until the men thoroughly understand what they are to do and are accurate in doing it is the only safe foundation upon which to develop speed, which then becomes a matter of practice.

Battery Administration.

32. The administrative duties of a battery of Field Artillery are too numerous for their efficient supervision in detail by one officer. To secure such supervision the battery commander must utilize the services of his lieutenants. The most effective assistance will not be obtained by holding each lieutenant responsible for a platoon, which is not a self-sustaining unit but one dependent upon agencies outside itself.

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The assignment of lieutenants to administrative functions must then be made so as to correspond to the various duties necessary to the daily existence of the battery as a whole. These duties may be classified into three departments:

Department A: The care and maintenance of all parts of the wheeled matériel.

Department B: The care of animals, the inspection, care, and issue of forage, the police of stables and picket lines, adjustment and care of harness, shoeing, etc.

Department C: The care and police of quarters, the superintendence of the battery mess, personal equipment and clothing, and the routine office work.

Each of these departments, together with all necessary personnel and matériel, should be under the direct supervision of one of the lieutenants, who should be held responsible for the work of his department. Except in emergencies the battery commander should give instructions affecting any department through the lieutenant in charge.

This division of administrative duties is also utilized to facilitate the instruction of the battery as follows: The lieutenant in charge of department A is the executive, and is placed in immediate charge of the individual instruction of the cannoneers and their duties in the gun squads; the one in charge of department B is placed in immediate charge of the instruction in equitation, in driving, and in all duties pertaining to the horses; and the one in charge of department C is reconnaissance officer and is placed in immediate charge of all dismounted instruction and assists the captain in the training of the battery commander's detail.

The fourth lieutenant, when available, is ordinarily the one with least experience as a battery officer. He should be utilized

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in assisting the others and should be required to thoroughly familiarize himself with their work.

In time of war the captain assigns his lieutenants to the departments to which they are best fitted, the especial fitness of the executive being the first consideration.

In time of peace, however, in order that the experience of lieutenants in administration and in training men and animals may be complete, their assignment to departments must be periodically changed. To insure this it is desirable that the assignments coincide with the instruction year, during which they should not be changed except when necessary because of changes in the assignment of lieutenants to the battery. A lieutenant will not be assigned to a department in which he has already had experience when it is possible to assign him to one in which he has had no experience or has had it less recently.

SECTION II.—GENERAL RULES.

33. Movements that may be executed toward either **flank** are explained as toward but one flank, it being necessary to substitute **left** for **right**, or the reverse, to have the command and explanation of the corresponding movement toward the other flank.

34. Any movement may be executed either from the halt or when marching, unless otherwise prescribed.

35. If the movement on foot be from the halt, or when marching in quick time, the command **double time** precedes the command **march**; if marching in double time, the command **double time** is omitted.

36. All mounted movements not specially excepted may be executed at the trot or gallop. The gallop is an exceptional gait for Light Artillery and should be used only for short distances.

37. The gait should habitually be increased or decreased progressively, the trot being executed from the walk and the

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gallop from the trot. If marching at the gallop the gait will be decreased to the trot, then to the walk, before halting; if marching at the trot, the same rule applies.

38. To execute a movement at the trot or gallop, the command **trot** or **gallop** precedes the command **march**, unless marching at the gait desired.

39. Movements or procedures explained for the smaller units are, in general, applicable to the larger ones when under instruction of the same character, the commands being modified so as to be adapted to the particular unit.

40. The intervals and distances prescribed in the text are in general such that, if marched by the flank from line, the elements will be in column at proper distances; or if marched by the flank from column, they will be in line at proper intervals. Similarly, if marching obliquely, a second oblique will place the elements in line or column, as the case may be, at proper intervals or distances. If, however, due to differences of length of elements, these conditions do not accurately obtain, the proper intervals or distances are gradually secured by appropriate modifications of the gait.

41. If, in forming elements abreast of each other, the commands: 1. **Battery (Platoon**, etc.), 2. **HALT**, be given during the movement, only those elements halt which have reached their new positions; the others continue the march and halt on reaching their positions.

42. For the purpose of correcting errors while marching, the instructor may command: 1. **In place**, 2. **HALT**; when all halt and stand fast. To resume the march, he commands: 1. **Resume**, 2. **MARCH.**

43. To revoke a preparatory command, or, being at a halt, to begin anew a movement improperly begun, the instructor

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commands: **AS YOU WERE,** at which the movement ceases and the former position is resumed.

44. If a change of formation requires a change of post of officers and noncommissioned officers, they proceed by the shortest routes to their posts in the new formation.

45. While the posts of officers and noncommissioned officers are specified in the text, as instructors they go wherever their presence is necessary.

46. Officers and noncommissioned officers commanding organizations or subdivisions thereof, when absent, are ordinarily replaced by the next in rank in their organization or subdivision.

47. For administrative purposes each unit of Field Artillery has its permanent designation, thus:

The First, Second, Third, Fourth, etc., Regiment of Field Artillery;

The First Battalion, Fifth Regiment of Field Artillery;

Battery D, Sixth Field Artillery;

The first, second, third, etc., platoon of a battery;

The first, second, third, fourth, etc., section of a battery.

For purposes of drill and maneuver, units will be designated by their temporary relative position in line or column, thus:

The right battery, left battalion;

The leading platoon, center battery;

The left section, right platoon.

The permanent numerical designation of units does not change as their relative order in line or column is changed, with the following exception:

After the pieces of a battery are unlimbered and established in line, they are designated from right to left as first piece, second piece, third piece, and fourth piece, or No. 1, No. 2, No. 3, and No. 4.

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SECTION III.—COMMANDS.

48. Commands are of two kinds: **Preparatory commands** and **commands of execution.**

The preparatory command, such as **forward,** indicates the movement that is to be executed.

The command of execution, such as **MARCH, HALT,** causes the execution.

Preparatory commands are distinguished in the text by *italics;* those of execution by **CAPITALS.**

49. The commands prescribed in the text are given by the instructor, except when otherwise specified.

50. To permit of the preparatory command being understood, a well-defined pause should be made between it and the command of execution. The duration of this pause depends in a measure upon the size of the body of troops under command. Ordinarily, in dismounted movements and in mounted movements executed from a halt, the pause should be brief and of uniform duration, as otherwise uncertainty is communicated to the ranks, and a ragged execution of the movement results.

51. The tone of command is animated, distinct, and of a loudness proportioned to the number of men under command. Indifference in giving commands leads to laxity in execution.

Each preparatory command is pronounced in an ascending tone of voice, but always in such a manner that the command of execution may be more energetic and elevated.

On foot the command of execution is pronounced in a firm, brief tone.

In mounted movements the preparatory commands are more or less prolonged to insure their being heard; the command of execution is always prolonged.

When giving commands to troops it is usually best to face or look toward them.

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52. When numbers are announced by voice as part of a command the thousands and hundreds are given separately, but the tens and units are combined thus:

25_____ Twenty-five.
400_____ Four hundred.
705_____ Seven hundred and five.
860_____ Eight hundred and sixty.
3000_____ Three thousand.
3200_____ Three, two hundred.
3250_____ Three, two hundred and fifty.
4050_____ Four thousand and fifty.

53. In transmitting numbers by telephone exact hundreds and thousands are so announced; of other numbers each digit is given separately. Thus—

400_____ Four hundred.
1800_____ One, eight hundred.
3000_____ Three thousand.
3225_____ Three, two, two, five.
4050_____ Four, zero, five, zero.

54. To secure uniformity, officers and noncommissioned officers are practiced in giving commands.

55. The bugle calls and prescribed arm signals are frequently used in instruction, in order that officers and men may readily recognize them.

CHAPTER II.—DEFINITIONS.

56. Alignment: A straight line upon which several men, teams, carriages, or bodies of troops are formed or are to be formed; or the formation of such line; or the dressing of several elements upon a straight line.

Base: The element on which a movement is regulated or on which a formation is made.

Center: The middle point or element of a command.

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Column: A formation in which the elements are placed one behind another.

Conduct of fire: The employment of the technical means necessary to cause fire of the desired nature to be brought to bear upon the target.

Depth: The space from head to rear of any formation, including the leading and rear elements. The depth of a man dismounted is 12 inches.

Disposition: The arrangement of the elements in a formation.

Distance: Open space between elements in the direction of depth.

Element: One of the component parts of a larger unit—as a file, gun squad, team, carriage, section, platoon, battery, etc.

Facing distance: About 14 inches, i. e., the difference between the front of a man in ranks, including his interval, and his depth.

File: Two men—the front-rank man and the corresponding man of the rear rank. The front-rank man is the **file leader.** A file which has no rear-rank man is a **blank file.** The term **files** applies also to individual men in single-rank formation. A single mounted man in ranks is also called a file.

File closers: The men who, in dismounted formations, are posted 2 yards in rear of the rear rank in line.

Fire direction: The tactical direction of one or more fire units with a view of bringing their fire to bear at the right place at the right time.

Fire discipline: That condition resulting from training and practice which insures an orderly and efficient working of the personnel in the delivery of fire.

Flank: The right or left of a command in line or column; also the element on the right or left of a line.

By the enemy's **right (left) flank** is meant the flank which the enemy himself would so designate.

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Formation: Arrangement of the elements of a command in their order in line, in column, or for battle.

Front: The space in width occupied by an element either in line or column. The term front denotes the direction of the enemy. The front of a man dismounted is 22 inches.

The front of a gun unlimbered is the direction in which the muzzle points; of a limber or of a carriage limbered, the direction in which the pole points.

Guide: An officer, noncommissioned officer, or private upon whom a command or an element thereof regulates its march.

Head: The leading element of a column, in whatever direction the column is facing.

Interval: Open space between elements abreast of each other.

Laying: The process of pointing a gun for range and direction, so as to cause the trajectory to pass through the target.

Left: The left extremity or element of a body of troops.

Line: A formation in which the different elements are abreast of each other. When the elements are in column the formation is called a line of columns.

Maneuver: A movement executed by a battery or larger unit for the purpose of changing from one formation to another.

Pace: Thirty inches; the length of the full step in quick time.

Rank: A line of men, horses, teams, or carriages abreast of each other.

Right: The right extremity or element of a body of troops.

Salvo: A single discharge from each of the guns of a battery or other unit fired in regular order from one flank to the other, with intervals of about two seconds.

Tail: The rear element of a column, in whatever direction the column is facing.

Volley: The rapid discharge of a certain indicated number of rounds, by each gun of a battery or other unit, each gun firing without regard to the others.

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PART II.

DISMOUNTED INSTRUCTION.

CHAPTER I.—GENERAL RULES.

57. Formations are habitually in double rank; the men always fall in at attention.

58. The interval between men in ranks is 4 inches and between ranks in flank column is 30 inches, measured from elbow to elbow. The distance between ranks is 40 inches, measured from the back of the man in front to the breast of the man in rear.

The front of a man is assumed to be 22 inches, or, including the interval, 26 inches; his depth, about 12 inches.

59. To secure uniformity of interval between files when falling in and in the alignments, each man places the palm of the left hand upon the hip, fingers pointing downward, thumb to the front. In falling in, the hand is dropped by the side as soon as the man next on the left has his interval; in the alignments at the command **front.**

60. Unless otherwise announced, the guide of a battery or subdivision of a battery in line is **right.**

In successive formation into line, the guide is toward the point of rest.

To march with the guide other than as prescribed above, or to change the guide: **Guide right (left).**

The announcement of the guide, when given in connection with a movement, follows the command of execution for that movement.

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61. When marching by the flank from line, the leading man of the front rank is, without indication, the guide of the column.

During the oblique march the leading man of the leading rank is, without indication, the guide.

When marching in line, the front-rank man on the designated flank is the guide.

CHAPTER II.—THE SOLDIER DISMOUNTED.

SECTION I.—GENERAL PROVISIONS.

62. This instruction has for its object the training of the individual recruit and afterwards that of the squad. It must be given with the greatest attention to detail.

63. In the instruction of the recruit frequent short rests should be given, in order that the men may not be unduly fatigued.

The instructor will take advantage of these rests to instruct the recruits in the customs and courtesies of the service, the duties of orderlies, the proper manner of receiving messages from and delivering them to officers, etc., so that when the recruit is finally reported for duty he will not only know his prescribed drill thoroughly but will know how to conduct himself out of ranks as a trained soldier.

64. From the beginning the instructor will insist on a smart appearance of the recruits and will require that their clothing be clean and neatly adjusted.

65. The instructor explains briefly each movement, first executing it himself, if practicable. He requires the recruits to take the proper positions unassisted and does not touch them for the purpose of correcting them, except when they are unable to correct themselves. He avoids keeping them too long at the same movement, although each should be understood before

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passing to another. He exacts by degrees the desired precision and uniformity.

66. In order that all may advance as rapidly as their abilities permit, the recruits are grouped according to proficiency as instruction progresses. Those who lack aptitude and quickness are separated from the others and placed under experienced drillmasters.

SECTION II.—THE RECRUIT.

67. For preliminary instruction a number of recruits, usually not exceeding three or four, are formed as a squad in single rank.

Position of the Soldier, or Attention.

68. Heels on the same line and as near each other as the conformation of the man permits.

Feet turned out equally and forming an angle of about 45°.

Knees straight without stiffness.

Hips level and drawn back slightly; body erect and resting equally on hips; chest lifted and arched; shoulders square and falling equally.

Arms and hands hanging naturally, thumbs along the seams of the trousers.

Head erect and squarely to the front, chin drawn in so that the axis of the head and neck is vertical; eyes straight to the front.

Weight of the body sustained principally upon the balls of the feet, heels resting lightly on the ground.

69. The instructor must insist that the men accustom themselves to the position of attention. It may be so exaggerated that it becomes not only ridiculous but positively harmful. Instead of that, the men must be taught to assume a natural and

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graceful position, one from which all rigidity is eliminated and from which action is possible without first relaxing muscles that have been constrained in an effort to maintain the position of attention. Coordination rather than strength should be depended upon.

The knees are extended easily, but never locked.

The body is inclined forward until the front of the thighs is directly over the base of the toes; the hips are square and the waist is extended by the erection of the entire spine, but not to such a degree that mobility of the waist is lost.

In extending the spine, the chest is naturally arched and the abdomen is drawn in, but not so as to interfere with respiration; the shoulders must not be raised, but are forced back and held loosely in normal position.

The chin should be horizontal.

When properly assumed, a vertical line from the top of the head should pass in front of the ear, the shoulder, and the thigh, through the balls of the feet.

All muscles should be contracted only enough to maintain this position, which at all times should be a lithesome one that makes for activity and that can be maintained for a long period without fatigue.

To Assemble.

70. To teach the recruits to assemble, the instructor requires them to place the palm of the left hand upon the hip, below the belt when worn; he then places them on the same line so that the right arm of each man rests lightly against the elbow of the man next on his right, and then directs the left hand to be replaced by the side.

When the recruits have learned how to take their places, the instructor commands: **FALL IN.**

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They assemble rapidly as above prescribed, each man dropping the left hand as soon as the man next on his left has his interval.

To Dismiss the Recruits.

71. Being in line at a halt: **DISMISSED.**

The Rests.

72. Being at a halt, the commands are: **FALL OUT**; **REST**; **AT EASE**; and, 1. **Parade**, 2. **REST.**

At the command **fall out**, the men may leave the ranks, but are required to remain in the immediate vicinity. They resume their former places, at attention, at the command **fall in.**

At the command **rest** each man keeps one foot in place, but is not required to preserve silence or immobility.

At the command **at ease** each man keeps one foot in place and is required to preserve silence but not immobility.

73. 1. **Parade**, 2. **REST.** Carry the right foot 6 inches straight to the rear, left knee slightly bent; clasp the hands, without constraint, in front of the center of the body, fingers joined, left hand uppermost, left thumb clasped by the thumb and forefinger of the right hand; preserve silence and steadiness of position.

74. To resume the attention: 1. **Squad**, 2. **ATTENTION.** The men take the position of the soldier.

Eyes Right or Left.

75. 1. **Eyes**, 2. **RIGHT (LEFT)**, 3. **FRONT.**

At the command **right**, turn the head to the right oblique, eyes fixed on the line of eyes of the men in, or supposed to be in, the same rank. At the command **front**, turn the head and eyes to the front.

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Facings.

76. To the flank: 1. **Right (left)**, 2. **FACE.**

Raise slightly the left heel and right toe; face to the right, turning on the right heel, assisted by a slight pressure on the ball of the left foot; place the left foot by the side of the right. **Left face** is executed on the left heel in the corresponding manner.

Right (left) half face is executed similarly, facing 45°.

To face in marching and advance, turn on the ball of either foot and step off with the other foot in the new line of direction; to face in marching without gaining ground in the new direction, turn on the ball of either foot and mark time.

77. To the rear: 1. **About**, 2. **FACE.**

Carry the toe of the right foot about a half foot-length to the rear and slightly to the left of the left heel without changing the position of the left foot; face to the rear, turning to the right on the left heel and right toe; place the right heel by the side of the left.

Salute with the Hand.

78. 1. **Hand**, 2. **SALUTE**, 3. **DOWN.**

At salute raise the right hand smartly till the tip of the forefinger touches the lower part of the headdress above the right eye, thumb and fingers extended and joined, palm to the left, forearm inclined at about 45°, hand and wrist straight; at the same time look toward the person saluted. At down drop the arm smartly by the side.

Steps and Marchings.

79. All steps and marchings executed from a halt, except right step, begin with the left foot.

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80. The length of the full step in quick time is 30 inches, measured from heel to heel, and the cadence is at the rate of 120 steps per minute.

The length of the full step in double time is 36 inches; the cadence is at the rate of 180 steps per minute.

The instructor, when necessary, indicates the cadence of the step by calling **one, two, three, four**, or **left, right,** the instant the left and right foot, respectively, should be planted.

81. All steps and marchings and movements involving march are executed in **quick time** unless the squad be marching in **double time,** or unless **double time** be added to the preparatory command. Example: 1. **Squad right, double time,** 2. **MARCH.**

82. All movements not specially excepted may be executed in double time.

Quick Time and Double Time.

83. Being at a halt, to march forward in quick time: 1. **Forward,** 2. **MARCH.**

At the command **forward,** shift the weight of the body to the right leg, left knee straight.

At the command **march,** move the left foot smartly straight forward 30 inches from the right, sole near the ground, and plant it without shock; next, in like manner, advance the right foot and plant it as above; continue the march. The arms swing naturally.

84. Being at a halt, or in march in quick time, to march in double time: 1. **Double time,** 2. **MARCH.**

If at a halt, at the first command shift the weight of the body to the right leg. At the command **march,** raise the forearms, fingers closed, to a horizontal position along the waist line; take up an easy run with the step and cadence of double time, allowing a natural swinging motion to the arms.

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If marching in quick time, at the command **march, given as** either foot strikes the ground, take one step in quick time, and then step off in double time.

85. To resume the quick time: 1. **Quick time,** 2. **MARCH.**

At the command **march,** given as either foot strikes the ground, advance and plant the other foot in double time; resume the quick time, dropping the hands by the sides.

To Mark Time.

86. Being in march: 1. **Mark time,** 2. **MARCH.**

At the command **march,** given as either foot strikes the ground, advance and plant the other foot; bring up the foot in rear and continue the cadence by alternately raising each foot about 2 inches and planting it on line with the other.

Being at a halt, at the command **march,** raise and plant the feet as described above.

The Half Step.

87. 1. **Half step,** 2. **MARCH.**

Take steps of 15 inches in quick time, 18 inches in double time.

88. Forward, half step, halt, and **mark time** may be executed one from the other in quick or double time.

To resume the full step from half step or march time: 1. **Forward,** 2. **MARCH.**

Side Step.

89. Being at a halt or mark time: 1. **Right (left) step,** 2. **MARCH.**

Carry and plant the right foot 15 inches to the right; bring the left foot beside it and continue the movement in the cadence of quick time.

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The side step is used for short distances only and is not executed in double time.

Back Step.

90. Being at a halt or mark time: 1. **Backward,** 2. **MARCH.**

Take steps of 15 inches straight to the rear.

The back step is used for short distances only and is not executed in double time.

To Halt.

91. To arrest the march in quick or double time: 1. **Squad,** 2. **HALT.**

At the command **halt,** given as either foot strikes the ground, plant the other foot as in marching; raise and place the first foot by the side of the other. If in double time, drop the hands by the sides.

To March by the Flank.

92. Being in march: 1. **By the right (left) flank,** 2. **MARCH.**

At the command **march,** given as the right foot strikes the ground, advance and plant the left foot, then face to the right in marching (**76**) and step off in the new direction with the right foot.

To March to the Rear.

93. Being in march: 1. **To the rear,** 2. **MARCH.**

At the command **march,** given as the right foot strikes the ground, advance and plant the left foot; turn to the right about on the balls of both feet, and immediately step off with the left foot.

If marching in double time, turn to the right about, taking four steps in place, keeping the cadence, and then step off with the left foot

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Change Step.

94. Being in march: 1. **Change step,** 2. **MARCH.**

At the command **march,** given as the right foot strikes the ground, advance and plant the left foot; plant the toe of the right foot near the heel of the left and step off with the left foot.

The change on the right foot is similarly executed, the command **march** being given as the left foot strikes the ground.

SECTION III.—THE SQUAD.

95. The squad normally consists of a corporal and seven privates.

After the recruits are permanently assigned, each squad assembles as prescribed in The Battery Dismounted.

For the instruction of recruits the men form in squads of eight in double rank **(144).** For instruction of a part of the battery dismounted the men may similarly be formed as squads without regard to their permanent assignment.

96. The squad executes the **halt, rests, facings, steps,** and **marchings** as explained in "The Recruit."

To Form the Squad.

97. To form the squad the instructor places himself 3 yards in front of and facing the point where the center is to be and commands: **FALL IN.** The men assemble **(70)** at double time at attention **(68).** The rear rank forms with a distance of 40 inches. The instructor then commands: **COUNT OFF.**

At this command all except the right file execute **eyes right,** and beginning on the right the files count **one, two, three, four;** each man turns his head and eyes to the front as he counts.

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Alignments.

98. To align the squad, the base file or files having been established: 1. **Right (Left)**, 2. **DRESS**, 3. **FRONT.**

At the command **dress** all men place the left hand upon the hip, whether dressing to the right or left; each man except the **base file**, when on or near the new line executes **eyes right**, and, **taking steps of 2 or 3 inches**, places himself so that his right arm rests lightly against the elbow of the man on his right, and so that his eyes and shoulders are in line with those of the men on his right; the rear-rank men cover in file.

The instructor verifies the alignment of both ranks from the right flank and orders up or back such men as may be in rear, or in advance, of the line; only the men designated move.

At the command **front**, given when the ranks are aligned, each man turns his head and eyes to the front and drops his left hand by his side.

In the first drills the basis of the alignment is established on, or parallel to, the front of the squad; afterwards, in oblique directions.

Whenever the position of the base file or files necessitates a considerable movement by the squad, such movement will be executed by each file marching to the front or oblique, to the flank or backward, as the case may be, without other command.

99. To preserve the alignment when marching: **GUIDE RIGHT (LEFT).**

The men preserve their intervals from the side of the guide, yielding to pressure from that side and resisting pressure from the opposite direction; they recover intervals, if lost, by gradually opening out or closing in; they recover alignment by slightly lengthening or shortening the step; the rear-rank men cover their file leaders at 40 inches.

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To Take Intervals and Distances; to Assemble.

100. Being in line at a halt: 1. **Take interval,** 2. **To the right (left),** 3. **MARCH,** 4. **Squad,** 5. **HALT.**

At the second command the rear-rank men march backward 4 steps and halt; at the command **march** all face to the right and the leading man of each rank steps off; the other men step off in succession, each following the preceding man at 4 paces, rear-rank men marching abreast of their file leaders.

At the command **halt,** given when all have their intervals, all halt and face to the front.

101. In **taking intervals,** file closers, at the second command, take a distance of 4 paces from the rear rank and, at the command **march,** face to the flank, each stepping off with the file nearest him.

102. Being at intervals, to assemble the squad: 1. **Assemble, to the right (left),** 2. **MARCH.**

The front-rank man on the right stands fast, the rear-rank man on the right closes to 40 inches. The other men face to the right, close by the shortest line, and face to the front.

103. Being in line at a halt: 1. **Take distance,** 2. **MARCH,** 3. **Squad,** 4. **HALT.**

At the command **march** the man on the right of the front rank moves straight to the front; the other men of the front rank, in order from right to left, and then those of the rear rank, in the same order, move straight to the front, each stepping off so as to follow the preceding man at 4 paces. The command **halt** is given when all have their distances.

In case more than one squad is in line, each squad executes the movement. The guide of each rank is right.

If it is desired that a less distance than 4 paces be taken the distance desired may be indicated in the preparatory command. For example: 1. **Take 8 paces distance.**

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104. Being at distances, the men of each squad may be caused to cover the man on the right of its front rank by the command **cover.**

105. Being at distances, the instructor may command: 1. **Right (Left),** 2. **FACE,** 3. **COVER.** The men face in the direction indicated and cover in file.

Before assembling from the resulting formation the instructor commands: 1. **Left (Right),** 2. **FACE.**

106. Being at distances, to assemble: 1. **Assemble,** 2. **MARCH.** The man originally on the right of the front rank stands fast; the others move forward to their positions in line.

If more than one squad is at distances, each squad executes the movement.

To assemble to the rear: 1. **About,** 2. **FACE,** 3. **Assemble,** 4. **MARCH.**

Executed as above, except that the man originally on the left of the rear rank stands fast.

107. In assembling file closers conform to the movement and resume their positions in line.

The Oblique March.

108. For the instruction of recruits, the squad being in column or correctly aligned, the instructor causes the squad to face half right or half left, points out to the men their relative positions, and explains that these are to be maintained in the oblique march.

109. 1. **Right (Left) oblique,** 2. **MARCH.**

Each man steps off in a direction 45° to the right of his original front. He preserves his relative position, keeping his shoulders parallel to those of the guide (**61**) and so regulates his steps that the ranks remain parallel to their original front.

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At the command **halt** the men halt faced to the original front.

Marching at the oblique, to resume the original direction: **1. Forward, 2. MARCH.**

The men half face to the left in marching and then move straight to the front.

If at **half step** or **mark time** while obliquing, the oblique march is resumed by the commands: **1. Oblique, 2. MARCH.**

To Turn on Moving Pivot.

110. Being in line: **1. Right (Left) turn, 2. MARCH.**

The movement is executed by each rank successively and on the same ground. At the second command the right-flank man of the front rank faces to the right in marching and takes the half step; the other men of the rank oblique to the right until opposite their places in line, then execute a second right oblique and take the half step on arriving abreast of the pivot man. All glance toward the marching flank while at half step and take the full step without command as the last man arrives on the line.

Right (Left) half turn is executed in a similar manner. The pivot man makes a half change of direction to the right and the other men make quarter changes in obliquing.

To Turn on Fixed Pivot.

111. Being in line, to turn and march: **1. Squad right (left), 2. MARCH.**

At the second command the right-flank man in the front rank faces to the right in marching and marks time; the other front-rank men oblique to the right, place themselves abreast of the pivot, and mark time. In the rear rank the third man from the right, followed in column by the second and first, moves straight

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to the front until in rear of his front-rank man, when all face to the right in marching and mark time; the other number of the rear rank moves straight to the front 4 paces and places himself abreast of the man on his right. Men on the new line glance toward the marching flank while marking time and, as the last man arrives on the line, both ranks execute **forward, march**, without command.

112. Being in line, to turn and halt: 1. **Squad right (left),** 2. **MARCH,** 3. **Squad,** 4. **HALT.**

The third command is given immediately after the second. The turn is executed as prescribed in the preceding paragraph, except that all men on arriving on the new line mark time until the fourth command is given, when all halt. The fourth command should be given as the last man arrives on the line.

113. Being in line, to turn about and march: 1. **Squad right (left) about,** 2. **MARCH.**

At the second command the front rank twice executes **squad right,** commencing the second **squad right** when the man on the marching flank has arrived abreast of the rank. In the rear rank the third man from the right, followed by the second and first in column, moves straight to the front until on the prolongation of the line to be occupied by the rear rank; changes direction to the right; moves in the new direction until in rear of his front-rank man, when all face to the right in marching, mark time, and glance toward the marching flank. The fourth man marches on the left of the third to his new position; as he arrives on the line, both ranks execute **forward, march,** without command.

114. Being in line, to turn about and halt: 1. **Squad right (left) about,** 2. **MARCH,** 3. **Squad,** 4. **HALT.**

The third command is given immediately after the second. The turn is executed as prescribed in the preceding paragraph,

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except that all men on arriving on the new line mark time until the fourth command is given, when all halt. The fourth command should be given as the last man arrives on the line.

CHAPTER III.—MANUAL OF THE PISTOL.

115. Both before and after drill or other exercise with the pistol, remove the magazine to see that it is empty, and draw back the slide and examine the bore to see that the pistol is not loaded.

116. The pistol being in the holster, to raise pistol: **1. Raise, 2. PISTOL.**

At the command **raise**, unbutton the flap of the holster and grasp the handle with the last three fingers of the right hand, back of the hand to the right. At the command, **pistol**, lift the pistol straight up, closing the thumb on the stock as it clears the holster, and extend the forefinger outside of the trigger guard. Carry the pistol forward and upward to a position 6 inches in front of the point of the right shoulder, barrel to the rear and inclined forward about 30 degrees.

117. Being at raise pistol: **1. Return, 2. PISTOL.**

If the pistol is loaded, see that the hammer is down or that the safety lock is in the locking position. Lower the pistol and raise the flap of the holster with the right hand. Insert the pistol in the holster and force it down. Button the flap with the right hand.

118. Being at raise pistol: **1. Inspection, 2. PISTOL.**

Without deranging the position of the hand, rotate the pistol so that the sights move to the left, the barrel pointing to the right front and upward. With the thumb and forefinger of the left hand grasp the slide and pull it toward the body.

If the magazine is empty, as it should be, the slide stop will lock the slide in the open position. Drop the left hand by the

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side. Carry the pistol to a position about 6 inches in front of the center of the body, barrel pointing upward at an angle of about 45 degrees and to the left, wrist straight and as high as the breast.

When the inspection is completed, resume **raise pistol**, release the slide stop with the left thumb, and lower the hammer by pressing the trigger.

119. The pistol being in the holster: **Prepare for inspection.**

At this command the flap of the magazine pocket is unbuttoned and turned back with the left hand. Each man in turn executes **raise pistol** and **inspection pistol** in time to be at the latter position as the inspection of the man on his right is commenced by the inspector.

As soon as the inspector passes, the soldier completes **inspection pistol**, executes **return pistol**, and with the left hand closes the magazine pocket.

120. Being at raise pistol **to remove the magazine:**

Without deranging the position of the hand, rotate the pistol so that the sights move to the right, the barrel pointing to the left front and upward; press the magazine catch with the right thumb and remove the magazine with the left hand.

121. To charge the magazine: Hold the magazine in the left hand, open end up, rounded side to the right. Take the cartridge in the right hand, thumb on the rim, bullet end pointing to the right; place the rim on the end of the magazine follower; force down the magazine spring and slip the cartridge to the left into the magazine. The next cartridge is similarly slipped in by placing it on the cartridge just inserted and forcing down the spring.

The magazine may be charged with any number of cartridges from one to seven.

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122. The pistol being in the position for removing the magazine, **to insert the magazine:**

With the left hand insert the magazine in the handle and shove it home, not by striking it, but with a quick continuous movement, making sure that it engages with the magazine catch. Resume **raise pistol.**

123. Being at **raise pistol** with at least one cartridge in the magazine: **LOAD.**

Rotate the pistol as in **inspection pistol.** With the thumb and forefinger of the left hand grasp the slide, and by pulling it toward the body until fully back and then quickly releasing it, cause a cartridge to enter the chamber of the barrel. If the pistol is to be kept in the hand and not fired at once, the safety lock is moved to the locking position with the right thumb. If the loaded pistol is to be carried in the holster the hammer must be fully lowered. Resume **raise pistol.**

124. The pistol being loaded, **to lower the hammer:**

The pistol being in the position for loading, place the left hand around the grip over the right, seat the left thumb firmly on the hammer, and insert the right forefinger inside the trigger guard. Exert sufficient pressure with the left thumb to control the movement of the hammer, press the trigger and the grip safety with the right hand, and carefully and slowly lower the hammer completely down. Remove the forefinger from the trigger.

To again cock the pistol, move the forefinger clear of the trigger, place the right thumb on the hammer, and bring the hammer back to the position of full cock.

125. To unload: UNLOAD.

Remove the magazine. Execute the motions of load, thereby throwing the cartridge from the chamber.

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126. Being at raise pistol, to fire: With the right thumb release the safety lock, if in the locking position; extend the arm, bring the sights on the target, and press the trigger.

The energy of recoil causes the mechanism of the pistol to eject the empty cartridge case, load, and prepare the pistol for the next shot. Pressure must be entirely relieved from the trigger after each shot in order that the trigger may reengage the sear. At the firing of the last cartridge, as the slide moves to the rear, it is automatically locked in the open position by the slide stop, thus calling attention to the fact that the magazine is empty.

127. To reload after firing out a magazine: Remove the empty magazine, insert a charged one, and release the slide stop with the left hand.

128. To exercise the squad in collective firing, either actual or simulated: 1. **At (such an object)**, 2. **Ready**, 3. **Squad**, 4. **FIRE.**

At the command **ready**, the pistols are cocked or the safety latches are released. At the command **fire**, each man aims and fires by steadily increasing the pressure of his grip. It is important that no attempt be made to **pull** the trigger.

129. Instruction in firing will conform to the regulations prescribed in the Small Arms Firing Manual.

130. The physical development of the men will be conducted in accordance with the methods prescribed in the Manual of Physical Training.

CHAPTER IV.—THE BATTERY DISMOUNTED.

SECTION I.—GENERAL PRINCIPLES AND ORGANIZATION.

131. The instruction prescribed for the battery dismounted is applicable, with obvious modifications, to the instruction of any number of platoons, sections, or squads dismounted.

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132. For technical, tactical, and administrative purposes the enlisted personnel of the battery is assigned to sections. **A section dismounted** consists of one sergeant, who is **chief of section**, and all the men assigned to the service of a piece and its caisson, called a **gun section**; or to the service of two caissons, called a **caisson section**. The leading caisson of a caisson section is the **first caisson**; the rear caisson, the **second caisson.** The section assigned to the service of the battery wagon and the store wagon and to the service of the tools carried in those wagons is called the **ninth section.** The section assigned to the service of supply is called the **supply section.** At dismounted formations the members of the supply section, unless assigned elsewhere, habitually form in the line of file closers of the ninth section.

133. The first four sections of the battery are **gun sections.** The remaining sections, except the ninth section and the supply section, are **caisson sections.** Each gun section consists of a **gun squad** and a **driver squad.** Each caisson section consists of a **caisson squad** and a **driver squad.** The ninth section consists of a **mechanic squad** and a **driver squad.**

134. Each **section dismounted** is formed in line, with the gun squad, caisson squad, or mechanic squad on the right, the driver squad on the left. Men temporarily attached to sections fall in in the line of file closers or at such other places as may be designated.

135. Each **gun squad** consists of one of the corporals and seven of the privates assigned to the service of a gun section. The corporal is the **gunner** and should be selected for his qualifications without regard to his rank in the section. The privates are **cannoneers,** numbered from No. 1 to No. 7.

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136. Each **caisson squad** consists of one of the corporals and seven of the privates assigned to the service of a caisson section. The corporal is a **caisson corporal.** The privates are **cannoneers,** three of whom are assigned to the first caisson and numbered from No. 4 to No. 6, and the remaining four to the second caisson and numbered from No. 4 to No. 7.

Movements prescribed for a gun squad apply, with obvious modifications, to a caisson, driver, or mechanic squad.

137. Each **driver squad** of the gun and caisson sections consists of a **caisson corporal,** the six drivers of the carriages of the section, and an extra cannoneer, No. 8, who is trained as a spare driver.

138. Each gun squad is formed in double rank as follows: The gunner and Nos. 2, 4, and 6 in the front rank in order from right to left; Nos. 1, 3, 5, and 7 in the rear rank, in order from right to left; No. 1 covering the gunner.

6	4	2	G

40 inches.

7	5	3	1

139. Each caisson squad is formed in double rank as follows: The caisson corporal and Nos. 4, 5, and 6 of the first caisson in the front rank in order from right to left; Nos. 4, 5, 6, and 7 of the second caisson in the rear rank, in order from right to left; No. 4 covering the caisson corporal.

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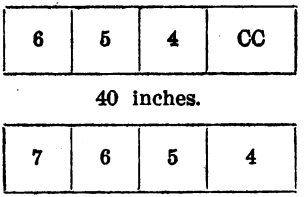
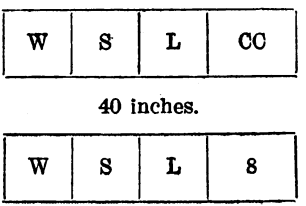


140. Each driver squad is formed in double rank as follows: The caisson corporal is on the right of the front rank; the lead, swing, and wheel drivers of the piece in a gun section, or of the first caisson in a caisson section, are on the left of the caisson corporal in order from right to left; the lead, swing, and wheel drivers of the caisson in a gun section, or of the second caisson in a caisson section, are in the rear rank in order from right to left covering the drivers of the front rank; the spare driver, No. 8, is in the rear rank covering the caisson corporal.



The driver squad of the ninth section is similarly formed, the spare lead and spare wheel drivers taking, respectively, the places preseribed for the caisson corporal and No. 8.

141. In the fifth section the driver squad is formed with the telephone corporal of the battery commander's detail as its corporal; the scout corporals and the signal privates of that detail fall in as file closers of the section.

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142. The mechanic squad is formed in double rank as follows: In the front rank the chief mechanic is on the right and three of the mechanics are on his left; in the rear rank, covering the men in the front rank, are the four remaining mechanics.

143. In a battery on a peace footing the spare cannoneers assigned to the ninth section constitute a squad, which forms on the left of the driver squad.

144. At dismounted formations, if a squad contains less than six men, it is increased to that number by transfers from other squads, or is broken up and its members assigned to other squads and posted in the line of file closers.

When a squad consists of six men, both of the interior files are blank; when of seven men, one such file is blank.

145. A **platoon dismounted** consists of one lieutenant, who is **chief of platoon,** and two sections dismounted.

The platoon dismounted is formed in double rank, with the sections arranged from right to left in the order of their permanent numbers.

146. A **battery dismounted** comprises the personnel shown in detail in Tables of Organization.

147. The battery dismounted is formed in double rank with the platoons arranged from right to left in the order of their permanent numbers.

The senior lieutenant is, at formations and exercises of the battery dismounted, assigned as chief of the first platoon. The lieutenant next in rank is assigned as chief of the second platoon, and so on.

Chiefs of platoon and section supervise the movements of their units.

148. When only a part of the battery is formed for dismounted instruction, the word **section** or **platoon,** as the case may be, is substituted in the commands for **battery.**

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SECTION II.—POSTS OF OFFICERS, NONCOMMISSIONED OFFICERS, ETC.

In Line.

149. The captain: Four yards in front of the center of the battery.

Chiefs of platoon: Two yards in front of the center of their platoons.

The fourth lieutenant, when there are but three platoons: In the line of file closers, opposite the center of the battery.

The first sergeant: In the front rank, 1 yard from the right of the first section.

The supply sergeant: In the front rank, 1 yard from the left of the left section.

The mess and stable sergeants: In the line of file closers of the ninth section.

Chiefs of section: One yard in front of the center of their sections.

Corporals: The right man of the front rank of their squads, except the scout corporals, who are in the line of file closers of the fifth section.

The guidon and the buglers: In the line of file closers of the first section.

Other men for whom there is no place in the squads: In the line of file closers in rear of the section to which they belong or are attached.

In Column of Squads.

150. The captain: Four yards from the flank, opposite the center, on the left (right) when the first (ninth) section is in front.

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Chiefs of platoon: On the same side as the captain, 2 yards from the flank and opposite the center of their platoons.

The fourth lieutenant, when there are but three platoons: On the side opposite the captain, 2 yards from the flank and opposite the center of the column.

The first sergeant: Either 40 inches in front of the guiding file of the leading squad or 40 inches in rear of the guiding file of the rear squad, according as the column has been formed by executing squads right or squads left from line.

The supply sergeant: Either 40 inches in rear of the guiding file of the rear squad or 40 inches in front of the guiding file of the leading squad, according as the column has been formed by executing squads right or squads left from line.

Chiefs of section: On the same side as the captain and 4 inches from the flank man of the front rank of the rear squad of their section.

The file closers: On the side opposite the captain and abreast of and 4 inches from the flank of the squad in rear of which they are posted in line.

SECTION III.—TO FORM AND TO DISMISS THE BATTERY.

151. At the sounding of the assembly, the first sergeant, facing the battery and 6 yards in front of where the center is to be, commands: 1. **FALL IN**, 2. **CALL ROLLS**, 3. **REPORT.**

At the command fall in, the gunners, caisson corporals, telephone corporal, and chief mechanic place themselves on the line facing to the front in their proper order, at sufficient distance apart for the formation of their squads; each squad forms on its corporal; the chiefs of section take their posts facing their sections. The assembly having ceased, the first sergeant causes the sections to close to the right, if necessary.

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At the command **call rolls**, the chiefs of section call the rolls and then face to the front.

At the command **report**, the chief of the first section salutes and reports: **First section, present**; or **First section, Corporal ——— and Private(s) ——— are absent.** The first sergeant, having received and verified this report, returns the salute. The chief of the second section then reports in like manner, and so on. Men who are known to be absent by proper authority are not reported absent by the chiefs of section. After receiving the reports, the first sergeant faces about, salutes the captain, and reports: **Sir, the battery is present or accounted for; or, Sir (so many), noncommissioned officers or privates are absent.** The first sergeant then takes his post.

The captain places himself 12 yards in front of the center of the battery, superintends the formation, and receives the report of the first sergeant, whose salute he returns.

The lieutenants take their posts as soon as the first sergeant has reported.

During instruction the officers have the saber drawn or in the scabbard, at the discretion of the captain. When the captain draws saber, the lieutenants also draw saber.

To Open Ranks.

152. Being in line at a halt: 1. **Open ranks**, 2. **MARCH**, 3. **FRONT.**

At the command **march** the front rank executes **right dress**; the rear rank and the file closers march backward four steps, halt, and execute **right dress**; the fourth lieutenant, when only three platoons are present, marches backward 4 steps and halts; the chiefs of platoon step forward 2 yards, the chiefs of section 1 yard, and all dress to the right. The captain goes to the right

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flank of the battery and aligns the chiefs of platoons, the chiefs of section, the front rank, the rear rank, and the file closers.

Before giving the command **front** the captain places himself in front of the post of the first sergeant and on a line with the chiefs of platoon and faces to the left. At the command **front** all the men turn their heads and eyes to the front, and those in ranks drop the left arm.

After the command **front** has been executed, the captain places himself 6 yards in front of the center of the battery, facing to the front.

To Close Ranks.

153. Being at open ranks: 1. **Close ranks,** 2. **MARCH.**

At the command **march,** the lieutenants and chiefs of section face about and resume their posts in line; the rear rank closes to 40 inches, each man covering his file leader; the file closers close to 2 yards from the rear rank; the captain then takes his post in line.

Alignments.

154. The alignments are executed as prescribed for the squad; the base squad may, if desired, be established instead of the base file. In aligning the battery, the captain places himself in prolongation of the line, 2 yards from and facing the flank toward which the alignment is made; after commanding **front,** he resumes his post.

To Dismiss the Battery.

155. Being in line at a halt:

The captain directs the first sergeant: **Dismiss the battery,** and returns the salute of the first sergeant.

The officers fall out; the first sergeant salutes, steps 3 yards to the front, faces to the left, and commands: **DISMISSED.**

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In exceptional cases the battery may be dismissed from any formation, either at a halt or marching.

SECTION IV.—MANEUVERS OF THE BATTERY.

General Provisions.

156. The maneuvers of the battery dismounted are limited to those necessary for its orderly handling. They are also valuable for fixing the attention of the men and for teaching habits of discipline and prompt obedience.

157. The instruction set forth in detail for the soldier dismounted is applicable to the battery dismounted, the **facings, steps, marchings, turnings, rests,** all being executed according to the same principles, officers, noncommissioned officers, and file closers conforming to the movements.

158. In marching in line the guide is the right or left man of the front rank **(60).** In marching in column of squads the guide is the first sergeant or supply sergeant if in ranks; otherwise the guide of the leading squad.

If the guide is changed while marching in column of squads, the captain, chiefs of platoon, chiefs of section, and file closers change to the other flank by darting through the column or passing around the ends of the column, as may be most convenient.

159. When line is formed from column of squads, the captain, chiefs of platoon and of section, file closers, the first sergeant, and the supply sergeant take their posts in line in the most convenient way without interfering with the movements of the squads.

160. Whenever the battery in line is faced about or marched to the rear, all men in the front rank, not covered, step into the new front rank; the first sergeant and the supply sergeant

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place themselves in line with the new front rank, but do not change to the opposite flank. The chiefs of platoon and section and the file closers maintain their relative positions.

To Form or March in Column of Squads from Line.

161. Being in line: 1. **Squads right (left)**, 2. **MARCH**; or 1. **Squads right (left)**, 2. **MARCH**, 3. **Battery**, 4. **HALT.**

Each squad executes the movement (**111**). The chiefs of platoon and of section and the file closers take their places in column of squads (**150**).

The guide of each rank preserves the trace and step of the preceding guide at a distance of 40 inches.

To Change Direction while in Column of Squads.

162. Being in column of squads, to change direction: 1. **Column right (left)**, 2. **MARCH.**

At the second command the front rank of the leading squad turns to the right on a moving pivot (**110**); the other ranks, without command, turn successively on the same ground and in a similar manner.

Column half right (half left) is similarly executed.

To Form Column of Squads from Line and Change Direction.

163. Being in line: 1. **Squads right (left)**, **column right (left)**, 2. **MARCH**; or, 1. **Right (Left) by squads**, 2. **MARCH.**

In the first case the right squad initiates the **column right** as soon as it has completed the **squad right.**

In the second case, at the command **march**, the right squad marches **forward**; the remainder of the battery executes **squads right (161)**, **column left (162)** on the same ground as the

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right squad, and follows the right squad. The right squad in moving off takes four short steps and then the full step.

To Form Line from Column of Squads.

164. Being in column of squads, to form line to the flank: 1. **Squads right (left)**, 2. **MARCH**; or, 1. **Squads right (left)**, 2. **MARCH**, 3. **Battery**, 4. **HALT.**

Executed by each squad (**112**). The chiefs of platoon and section, file closers, etc., take their posts in line (**149**) in the most convenient manner.

165. Being in column of squads, to form line on right or left: 1. **On right (left) into line**, 2. **MARCH**, 3. **Battery**, 4. **HALT**, 5. **FRONT.**

At the first command the corporal of the leading squad commands: **Right turn.** The corporals of the other squads command: **Forward**, if at a halt. At the second command the leading squad turns to the right on moving pivot. The command halt is given when the leading squad has advanced the desired distance in the new direction; it halts; its corporal then commands: **Right (left) dress.**

The squads in rear continue to march straight to the front; each, when opposite the right of its place in line on the left of the preceding squads, executes right turn at the command of its corporal; each is halted on the line at the command of its corporal, who then commands: **Right dress.** All dress on the first squad in line.

If executed in double time, all the squads march in double time until halted.

166. Being in column of squads to form line to the front: 1. **Right (Left) front into line**, 2. **MARCH**, 3. **Battery**, 4. **HALT**, 5. **FRONT.**

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At the first command the corporals of the squads in rear of the leading one command: **Right oblique.** If at a halt, the corporal of the leading squad commands: **Forward.** At the second command the leading squad moves straight forward; the rear squads oblique as indicated. The command **halt** is given when the leading squad has advanced the desired distance; it halts; its corporal then commands: **Left dress.** Each of the rear squads when opposite its place in line resumes the original direction at the command of its corporal; each is halted on the line at the command of its corporal, who then commands: **Left dress.** All dress on the first squad in line.

If executed in double time the leading squad marches in quick time, the other squads take the quick time upon arriving upon the line, and the guide is toward the first unit on the line. (*C. D. and S. R. F. A. No. 1.*)

To Form Flank Column of Files from Line.

167. Movements in flank column have no disciplinary value. Their use should be limited to the rare occasions necessitating a narrow front of the column. They are executed in quick time only.

168. Being in line at a halt: 1. **Right (Left)**, 2. **FACE**, 3. **Forward**, 4. **MARCH.**

At the second command all face to the right. At the fourth command all take the full step. Individuals not in the two ranks move so as to preserve the relative positions they had in line.

Route Order and at Ease.

169. Marching in column of squads: 1. **Route order**, 2. **MARCH**; or, 1. **At ease**, 2. **MARCH.**

Officers carry their sabers at will or in the scabbard; the men retain their positions in ranks, but are not required to keep step.

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If the command be route order, the men are permitted to talk; if the command be at ease, silence is preserved.

To resume the cadenced step: 1. Battery, 2. **ATTENTION.**

If the command halt be given while marching at route order, the men remain at rest in ranks; if while marching at ease, they remain at ease.

Route order and at ease are not used while marching in double time.

The use of dismounted exercises being limited, the marching of the battery dismounted at route order or at ease should be exceptional.

CHAPTER V.—PRELIMINARY EXERCISES OF THE GUN SQUADS.

SECTION I.—FORMATION OF THE GUN SQUADS.

To Form the Gun Squads.

170. The instructor indicates the place of formation and commands: **FALL IN.**

Each gunner repeats the command and hastens to place himself, faced to the front, where the right of his squad is to rest.

The cannoneers move at double time and take their places.

171. The place of formation is indicated and the command given thus, for example: 1. **In front (rear) of your pieces (caissons);** or, 1. **On the right (left) of your pieces (caissons) facing them;** or, 1. **On the road facing the park,** 2. **FALL IN.**

172. In case the front or rear of the carriages is designated, each squad falls in at its post (**175–177**).

173. For the first formation of the gun squads for any drill or exercise the instructor cautions as **gun squads before giving** the command.

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To Tell Off the Squads.

174. CALL OFF. In each gun squad (**138**) the cannoneer on the right of the rear rank calls off **one**; the cannoneer on the left of the gunner, **two**; the cannoneer on the left of No. 1, **three**; and so on. The gunner does not call off.

In each caisson squad (**139**) the cannoneers of the front rank call off first, thus: **four, five, six**, in order from right to left, followed by the cannoneers of the rear rank in the same order. The caisson corporal does not call off.

After having called off, if a subsequent formation is ordered, the cannoneers fall in at once in their proper order.

SECTION II.—POSTS OF GUN SQUADS AND CANNONEERS; MOUNTING AND DISMOUNTING.

Posts of the Gun Squads, Carriages Limbered.

175. In front of the pieces or caissons: Each squad is in line facing to the front, its rear and center 2 yards from the end of the pole or from the heads of the lead horses.

176. In rear of the pieces or caissons: Each squad is in line facing to the front, its front and center 2 yards from the muzzle or from the rear of the caisson.

177. If no special place of formation is designated, each squad, when formed at the carriages, is posted in front of the leading carriage of its section.

To Post the Gun Squads.

178. The squads are marched to the park, and, on arrival near the carriages, the instructor commands: **Squads in front (rear) of your pieces (caissons).**

Each gunner marches his squad to its carriage and posts it in the indicated position.

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179. The instructor habitually causes the squads to approach the front (rear) of the carriages which he designates in his command, from the right of the park if left in front and from the left if right in front.

Posts of the Cannoneers, Carriages Limbered.

180. The gunner and No. 1 opposite the rear of the limber wheels of the piece.

Nos. 2 and 3 opposite the rear of the gun wheels.

Nos. 4 and 5 opposite the rear of the caisson wheels.

Nos. 6 and 7 opposite the rear of the limber wheels of the caisson.

The gunner and even numbers are on the right, the odd numbers on the left, all 2 feet outside the wheels, facing the front.

To Post the Cannoneers.

181. 1. **Cannoneers,** 2. **POSTS.** Each gunner repeats the command **posts.** The cannoneers leave the ranks, if formed, and move at double time by the shortest practicable routes to their posts.

182. For preliminary instruction the squads, on entering the park, are first posted with their carriages; the cannoneers are then sent to their posts by the foregoing command. The command is general, however, and is applicable when the cannoneers are in or out of ranks, at a halt or marching, and when the carriages are limbered or unlimbered.

To Mount the Cannoneers on the Carriages Limbered.

183. In each squad the gunner and No. 1 mount on the limber chest of the piece.

Nos. 2 and 3 mount on the axle seats.

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Nos. 4 and 5 mount on the caisson chest.

Nos. 6 and 7 mount on the limber chest of the caisson.

When extra cannoneers are present:

No. 8 mounts between Nos. 6 and 7.

No. 9 mounts between Nos. 4 and 5.

The gunner and even numbers mount on the right side of their respective carriages, odd numbers on the left.

184. 1. Cannoneers, prepare to mount, 2. MOUNT.

At the first command the cannoneers who mount on the limber chests or axle seats hasten to the rear of the limber chests or axle seats; those who mount on the caisson chest hasten to the front of that chest. Each cannoneer who mounts on the limber chest places the foot nearest the wheel on the step, grasps the chest handle with the hand nearest the wheel, and with the other hand grasps the hand of the cannoneer opposite him. Each cannoneer who mounts on the caisson chest places the foot nearest the wheel on the step, and grasps the chest handle with the hand nearest the wheel. Cannoneers who mount on the axle seats place the foot nearest the wheel on the brake beam, and grasp the seat handle with the hand nearest the wheel.

At the command **mount**, all spring up and seat themselves, those on the chests facing to the front, those on the axle seats

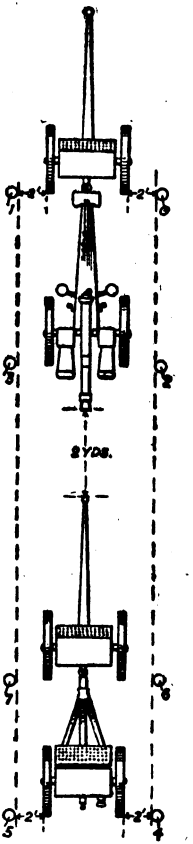

PLATE 40, Par. 180.

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to the rear. Those who mount on the limber chests place the foot farthest from the wheel on the top of the limber chest, and then step down on the footboard.

185. If the command be: 1. **Cannoneers,** 2. **MOUNT,** the cannoneers excute, at the command **mount,** all that has been prescribed for the commands **prepare to mount** and **mount.**

To Dismount the Cannoneers from the Carriages.

186. 1. **Cannoneers, prepare to dismount,** 2. **DISMOUNT.**

The cannoneers on the chests stand up on the footboards at the first command; at the second command all the cannoneers jump to the ground and take their posts at the double time.

187. If the command be: 1. **Cannoneers,** 2. **DISMOUNT,** they execute, at the command **dismount,** all that has been prescribed for the commands **prepare to dismount** and **dismount.**

Posts of the Cannoneers, Carriages Unlimbered but not Prepared for Action.

188. In each squad the gunner immediately in rear of the cannoneer's seat, on the left side of the trail of the gun.

No. 1, immediately in rear of the cannoneer's seat, on the right side of the trail of the gun.

No. 2, 2 feet in rear of the gunner, covering him.

Nos. 3, 4, and 5, 2 feet in rear of the caisson chest in the order named from right to left.

Nos. 6 and 7, abreast and in order from right to left, 5 yards in rear of the trail spade.

Higher-numbered cannoneers, if present, accompany the limbers. The cannoneers stand at attention at their posts, facing to the front.

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To Change the Posts at the Cannoneers.

189. In order to exercise the cannoneers in all duties connected with the service of the piece, to vary the drill, and to fix the attention of the men the posts of the cannoneers are frequently changed.

190. The cannoneers being at their posts, carriages limbered or unlimbered: 1. **Change posts,** 2. **MARCH.**

In each squad No. 1 quickly takes the post of No. 2, No. 2 of No. 3, No. 3 of No. 4, No. 4 of No. 5, No. 5 of No. 1. Higher-numbered cannoneers change only when specially directed.

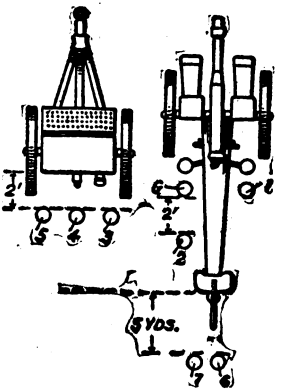

PLATE 41, Par. 188.

SECTION III.—MOVEMENTS OF THE CARRIAGES BY HAND.

To Move by Hand the Carriages Limbered.

191. To the front: 1. Pieces (Caissons) forward, 2. MARCH, 3. HALT.

In each squad, at the first command, the gunner and No. 1 hasten to the end of the pole; Nos. 2 and 3 to the limber wheels; Nos. 4 and 5 to the rear wheels; higher-numbered cannoneers to the rear of the carriage; the gunner and even numbers working on the right side of the carriage, odd numbers on the left. The cannoneers who work at the pole or at the wheels grasp the same with both hands; those in rear of the carriage prepare to push against the most convenient part of the carriage.

At the command **march,** all assist in moving the carriage to the front. At the command **halt,** the carriage is stopped, the pole is lowered to the ground, and all resume their posts.

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192. To the rear: 1. Pieces (Caissons) backward, 2. MARCH, 3. HALT. Executed as in the preceding paragraph, except that at the command march the cannoneers move the carriage to the rear and that the higher-numbered cannoneers place themselves in front of the rear axle of the carriage and push against the most convenient part of the carriage.

SECTION IV.—DUTIES OF THE CANNONEERS IN UNLIMBERING.

Disposition of the Carriages Before and After Unlimbering.

193. Before unlimbering: The piece and its caisson are placed abreast of each other, 2 yards apart, poles pointing in the same direction. This formation of the carriages is called a double section. The interval of 2 yards should not be materially changed, otherwise the amount of movement of the carriages by hand is greatly increased.

194. If it is intended to fire to the front, the caissons should be placed on the left of their pieces before the command for unlimbering is given; if it is intended to fire to the rear, the caissons should be on the right of their pieces; if to the flank, on either side of their pieces. In emergencies the carriages may be unlimbered from any formation. Dispositions to meet various situations should be practiced.

195. When not horsed the carriages are drawn by the cannoneers and the instructor gives the necessary instructions for moving the carriages by the shortest routes into the prescribed positions.

196. After unlimbering: The adjacent wheels of the gun and caisson are about 1 foot apart, the gun muzzle and the caisson trail pointing to the front, the gun on the right and slightly in advance of the caisson.

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The gun is placed slightly in advance to allow for recoil at the first shot, which on ordinary ground is about 10 inches.

The interval of 1 foot may be increased to permit wide movements of the trail if they are anticipated, but effort should be made to preserve the protection afforded by the shields.

In emergencies the caissons may be placed temporarily on the right of their pieces. As this position is not favorable to the service of ammunition, the caissons should be placed on the left of their pieces as soon as practicable.

197. In active service and in instruction simulating service conditions, the limbers are placed under cover in the vicinity of the position; if no cover is obtainable in the vicinity, they are placed in line in rear of either flank at such place as the instructor may designate.

To Unlimber.

GENERAL RULES.

198. 1. In unlimbering to fire to the front each caisson establishes the position.

2. In unlimbering to fire to the rear, each piece establishes the position.

3. In unlimbering to fire to the flank, the element (gun or caisson) on the side toward which fire is to be directed establishes the position.

4. If the carriages, after unlimbering, have to be moved by hand to the firing position, all the cannoneers of the gun squad, when the ground is difficult, assist at each carriage in turn in moving it to the designated position.

5. In drills with the carriages not horsed, spare cannoneers or those higher in number than No. 5 are used to move the limbers to the place designated by the instructor.

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6. If the carriages are not horsed, they are unlimbered successively, the one which establishes the position being unlimbered first. The limbers are drawn by cannoneers designated by the instructor. Thus, if only the gunner and five cannoneers are present, the cannoneers posted with the piece may be required to move the limber of the caisson, and those with the caisson, the limber of the piece. If higher-numbered cannoneers are present, however, they are ordinarily used for this purpose.

To Fire to the Front.

199. The carriages being in double section (198) the caissons on the left: **ACTION FRONT.** If marching the carriages halt at the command or signal. The cannoneers, if mounted, dismount after the carriages have halted.

The Caissons: Nos. 4 and 5 jump to the trail handles. Nos. 6 and 7, if present, run to the right and left caisson wheels, respectively, and stand ready to assist in such movements of the carriage as may be necessary. No. 4 unlatches the pintle; Nos. 4 and 5 raise the trail from the pintle; and No. 4, by raising his arm, signals for the drivers to drive on; Nos. 4 and 5 then lower the trail to the ground. No. 4 sets the brake, and all the cannoneers at the caisson take their posts.

The Pieces: The gunner and No. 1 jump to the trail handles. No. 2 runs around the muzzle of the gun to the wheel that is to become the right wheel of the piece unlimbered and places himself so as to be ready to turn the top of his wheel toward the trail. No. 3 runs around the muzzle of the gun to the wheel that is to become the left wheel of the piece unlimbered and places himself so as to be ready to turn the top of his wheel toward the muzzle. The gunner unlatches the pintle, and, assisted by No. 1, raises the trail from the pintle. The

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gunner, by raising his arm, signals for the drivers to drive on. The gunner and No. 1 carry the trail away from the caisson and all of the cannoneers working together turn the piece around 180°. The gunner causes the piece to be placed by the side of the caisson (196). The gunner and No. 1 lower the trail to the ground, and all the cannoneers at the piece take their posts.

Limbers: At the signal drive on, the limbers take their prescribed positions (197). To take posts in rear of the carriages each caisson limber executes a left about, moves straight to the rear, executes another left about, and halts, so that the heads of the lead horses or the end of the pole will be 25 yards from the rear of the caisson. Each piece limber follows the caisson limber, passes around in rear of it, and halts so as to be abreast of it and 2 yards to its right.

In horse batteries, Nos. 6 and 7 do not assist at the caisson.

To Fire to the Rear.

200. The carriages being in double section, the caissons on the right: **ACTION REAR.** If marching, the carriages halt at the command or signal. The cannoneers, if mounted, dismount after the carriages have halted.

The Caisson: Nos. 4 and 5 jump to the trail handles. Nos. 6 and 7, if present, run to the right and left caisson wheels, respectively. No. 6 stands ready to turn the top of his wheel away from the trail, while No. 7 stands ready to turn his toward the trail. No. 4 unlatches the pintle; Nos. 4 and 5 raise the trail from the pintle and No. 4, by raising his arm, signals for the drivers to drive on; Nos. 4 and 5 carry the trail away from the piece and all the cannoneers working together turn the caisson around 180° and place it by the side of the

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piece (**196**); Nos. 4 and 5 lower the trail to the ground. No. 4 sets the brake and all of the cannoneers working on the caisson take their posts.

The Piece: The gunner and No. 1 jump to the trail handles. No. 2 runs around the muzzle of the gun to the wheel that is to become the right wheel of the piece unlimbered, and stands ready to assist in such movements of the carriage as may be necessary. No. 3 runs around the muzzle of the gun to the wheel that is to become the left wheel of the piece unlimbered, and stands ready to assist in such movements of the carriage as may be necessary. The gunner unlatches the pintle and, assisted by No. 1, raises the trail from the pintle. The gunner, by raising his arm, signals for the drivers to drive on. The gunner and No. 1 lower the trail to the ground and all the cannoneers at the piece take their posts.

Limbers: To take post in rear of the carriages, each caisson limber inclines well to the right, moves to the rear, executes a left about, and halts so that the heads of the lead horses or the end of the pole will be 25 yards from the rear of the caisson. Each piece limber follows the caisson limber, passes around in rear of it, and halts so as to be abreast of it and 2 yards to its right.

In horse batteries, or when Nos. 6 and 7 are not present, Nos. 2 and 3 perform the duties prescribed for Nos. 6 and 7, respectively, as soon as the piece trail is lowered to the ground.

To Fire to the Flank.

201. The caisson being on either side of the piece, 2 yards from and abreast of it: **ACTION RIGHT (LEFT).**

Executed according to the principles of **action front** and **action rear**, with the following modifications: After the carriages are

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unlimbered the muzzle of the gun and the trail of the caisson are turned in the direction of fire, and the carriage in rear is run up to its proper position on the line. The carriage on the side toward which fire is to be delivered is first established in position, and then all the cannoneers assist in bringing up the carriage in rear to its proper place.

Limbers: To take post in rear of their carriages, the limbers farthest from the flank toward which fire is to be delivered move out first, wheel away from the direction of fire, and after having gained sufficient distance to the rear execute an about and halt at the prescribed position. The other limbers follow and take position in a similar manner.

SECTION V.—DUTIES OF THE CANNONEERS IN LIMBERING.

202. The carriages being in position unlimbered and in march order, to limber to the front and rear: 1. **Limber,** 2. **FRONT AND REAR.**

In each squad the gunner and No. 1 face to the rear at their posts. No. 2 places himself on the right of the gunner, facing to the rear. No. 3 jumps across the trail of the piece and places himself on the left of No. 1, facing to the rear. Nos. 4 and 5 hasten to the front of the caisson; No. 4 releases the brake, and both place themselves with their backs toward the chest, close up against the footboards, No. 4 on the right, No. 5 on the left of the trail. No. 6 passes around the right of the piece and places himself on the right of No. 4. No. 7 runs around the left of the caisson and places himself on the left of No. 5.

The limbers are brought up so as to move squarely across the direction of the trails and so that the wheel nearest the trail will pass about a foot outside of the lunette.

When the axle of the piece limber is nearly in line with the trail, the gunner commands: 1. **Limber,** 2. **HALT.** The limber

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halts and is then swung around and again halted so that the pole is pointing in the direction of the trail and so that the pintle is almost over the lunette. As soon as the limber has halted in this position, the gunner and No. 1 spring to the trail handles and raise the trail. Nos. 2 and 3 jump to the gun wheels and prepare to assist in any movements of the carriage that may be necessary. The gunner and No. 1 place the lunette over the pintle; the gunner latches the pintle.

The caisson is limbered in the same manner, No. 4 giving the commands for halting the limber; Nos. 4 and 5 handling the trail; No. 4 latching the pintle; Nos. 6 and 7 assisting by working on the wheels in any movements of the carriage.

All the cannoneers take their posts at the carriages limbered.

203. To the rear: 1. **Limber**, 2. **REAR.**

No. 4 releases the brake. The caisson is turned around 180°; Nos. 4 and 5 carrying the trail away from the piece. Nos. 1 and 6 turn the top of their wheel toward the trail; Nos. 3 and 7 turn the top of their wheel away from the trail; the gunner and No. 2 assist by pulling and pushing on the chest. The caisson having been turned, all the cannoneers working together run the caisson 20 yards straight to the rear of the line of guns. Nos. 4 and 5 lower the trail and all the cannoneers take their posts for limbering. The limbers are brought up and the limbering is completed as described in paragraph **202.**

Section VI.—To Leave the Park.

204. At the conclusion of the instruction in the park the instructor sees that the carriages are properly cared for and then causes the squads to form in front or rear of their carriages. The squads may then be closed by the command: 1. **Squads right (left)**, 2. **March**, 3. **Close**, 4. **MARCH.** At the last

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command the leading squad halts and the rear squads close on it in quick time and halt. If executed in double time, the leading squad resumes or continues the quick time at the last command and the other squads take the quick time when they are closed.

Or, the squads may be faced to the right or left. At the command: 1. **Close**, 2. **MARCH**, the leading squad stands fast and the others close on it.

After forming the squad column the men are marched off.

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PART III.

MOUNTED INSTRUCTION.

CHAPTER I.—THE SOLDIER MOUNTED.

SECTION I.—OBJECT AND SEQUENCE OF THE INSTRUCTION.

205. The object of this instruction is the training of the Field Artillery soldier:

(*a*) In equitation and horsemanship.

(*b*) In the care, management, and conditioning of horses.

(*c*) In saddling and unsaddling; in fitting, cleaning, and caring for all the different articles of horse equipment.

In order to give greater variety to, and promote the instruction of recruits, their training mounted will be commenced as soon as they have received elementary instruction dismounted, and the two kinds of training will then be carried forward simultaneously.

206. A systematic and progressive sequence of instruction based upon sound, fundamental principles as laid down in the Manual of Equitation is a matter of the greatest importance. An instructor who does not have clearly defined and correct ideals, who does not understand the results to be attained and the methods to be employed will spoil both men and horses.

Only conscientious efforts and absolute confidence that the methods pursued will produce the desired results will insure success in this training.

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The enlisted personnel assisting the instructor must be conversant with the methods, sequence, and goal of instruction.

207. Elementary instruction in equitation and horsemanship is logically divided into three periods, as follows:

1. First period devoted to:

(*a*) Establishing confidence.

(*b*) Suppling the rider to secure independence of movement in hands, body, and legs, and to combat rigidity.

(*c*) Establishing a correct and firm seat independent of the reins.

2. Second period devoted to: Teaching the aids and their correct application in controlling the horse.

3. Third period devoted to: Work on long lines and exercises over varied ground.

In a program of instruction the limits of these periods can not be clearly defined. Obviously they must overlap to a greater or less extent. Nevertheless, by assigning principles and ideas to a fixed place in point of time, clearness in understanding the theory and practice of equitation is gained. Moreover, such an assignment directs the efforts of both instructor and pupil upon proper lines and assists them in locating faults and in applying the proper remedies.

208. Concurrently with the instruction covering these periods advantage should be taken of rests during instruction and of inclement weather, to lecture to, and then question the men on the rules for the care, management, and conditioning of horses; on the principles of saddling, bitting, and shoeing; on fitting, cleaning, and caring for equipment; on the points of the horse; on minor ailments and first aid; and on other elementary but useful knowledge connected with horses and stables.

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209. The instruction covering these periods should be satisfactorily completed in about 60 lessons of at least one and one-half hours each. While it is not expected that the average man even with perfect instruction can become a satisfactory horseman in so short a time, due to an insufficient amount of actual practice, it is expected that he can become so well grounded in the principles of equitation and in the management of horses as to be able to take up and pursue with rapid progress the further instruction outlined under "The Driver." This additional instruction should, within a further period of three months, bring him up to the standard required (29).

210. The elementary instruction herein outlined is conducted on the snaffle. That involving the use of the double bridle is confined to and made a part of the instruction in advanced equitation.

Instruction in advanced equitation for officers, noncommissioned officers, and selected privates will be under charge of an officer especially selected for his expert ability as a horseman, and will be in accordance with the authorized manuals dealing with the subject.

SECTION II.—THE STANDARD REQUIRED.

211. The efficiency of Field Artillery depends so largely on the riding of the men, and on the care, training, management, and condition of the horses that the maintenance of a high standard of horsemanship must be in the aim of all commanders.

212. For a Field Artillery officer skill in the actual riding and management of a horse is a most desirable accomplishment to which some are better adapted and in which they become more expert than others, but a thorough understanding of the care, management, and conditioning of horses, the ability to instruct men in equitation and horsemanship, and the ability to

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train or direct the training of remounts, are essential qualifications.

213. For a Field Artillery soldier the qualifications of a good horseman are as follows:

(*a*) He should have a strong seat, quite independent of the reins.

(*b*) He should be able correctly to apply the aids by which a horse is controlled.

(*c*) He should be capable of covering long distances on horseback with the least possible fatigue to himself and to his horse.

(*d*) Under proper directions, he should be able to train an untrained horse and to improve a badly trained one.

(*e*) He should have a practical knowledge of the care of horses, both in garrison and in the field; he should understand how to detect and treat the minor ailments to which they are liable; and he should be a good groom.

In addition, if a driver—

(*f*) He should be able to drive a pair of horses in any position in a team and make them do even work in draft without distressing or fretting them.

(*g*) He should thoroughly understand the care and fitting of harness.

Section III.—Hints to Instructors.

214. An instructor in equitation and horsemanship should, preferably, be a practical and expert horseman, one who has a great interest in and a passion for the work. He must endeavor to make his lessons progressive and interesting and must suit his progress to the capacity of his pupils.

All routine in the instruction must be avoided. On frequent occasions new and unexpected but logical and proper requirements should be set by the instructor.

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Especially in the beginning must the instructor be careful to match rider and horse according to the aptitude of the former. Later on horsemanship is promoted by gradually increasing the difficulties of the task and by making more frequent changes in the assignment of horses.

The setting-up exercises, as prescribed in the Manual of Physical Training, as well as gymnastic instruction of any kind, are profitably made a part of the daily program of men undergoing riding instruction.

215. Well-trained horses, free from vicious habits and possessing good elastic gaits are absolutely necessary in order to reach the desired standard in the allotted time. These horses should be maintained in excellent condition and worked out daily in sections by good older riders, especially by the assistant instructors, prior to the prospective arrival of recruits.

216. The soldier will be taught that his disposition or temper is usually communicated to and reacts upon the horse, and that it is therefore necessary to preserve patience and calmness. A feature of all instructional work should be its quietness. By nature a horse is a nervous animal, and shouting or yelling fills him with fear often to the extent of rendering him quite unmanageable. The instructor should always maintain an attitude and bearing that will serve as an example to the men under his charge.

217. The health and personal hygiene of the men must be constantly watched, otherwise accidents and loss of confidence may follow.

Mounted instruction is conducted without hurry, the lesson beginning and ending at a walk. Rests should be frequent, especially with recruits, and exercises and gaits should be changed with sufficient frequency to avoid wearying men and horses. An instructor should be careful not to keep horses

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reining back, or working on two tracks, or in place, for more than a few minutes at a time. Generally speaking, horses should not be reined back for more than 5 yards nor be worked on two tracks for more than 40 or 50 yards at a time. All work in place must be slow, deliberate, and without noise or exaggerated use of the aids. These exercises should always be followed by movements to the front with the horse straight.

218. The instructor and his assistants have no fixed position. They may be on foot or mounted. For the first lessons it is advantageous to remain on foot, so as better to explain movements and correct faults. Later it is more advantageous to be mounted, for an instructor, in addition to a verbal description, can then give a practical illustration of what is required. A recruit who may have difficulty in learning his work by mere verbal instruction will often quickly do so by copying an expert horseman.

219. Men will be taught that exaggerated movement of any sort is crude and unfinished and that the expert horseman attains his ends with the minimum of exertion to himself and to his horse.

220. Lessons, movements, or explanations which tax the understanding of the average man should always be given individually or in small groups.

All practical work and new exercises should be preceded and made clear by actual demonstration, either mounted or dismounted or on the wooden horse.

During the execution of a movement or exercise the instructor avoids general remarks, and in the correction of faults he addresses by name those committing them.

The instructor must frequently question his pupils to satisfy himself that his instructions are thoroughly comprehended. During periods of rest or when at a halt or moving at the slower

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gaits he mingles with the men, and, by questions and explanations addressed to individuals, he endeavors to impress upon them the principles embodied and to awaken their interest.

During the riding instruction proper only short, clear, and catchy phrases which will appeal to the intelligence of the men should be used. Lengthy explanations should be made either before or after the instruction hour, with the riders gathered about the instructor.

221. During the early instruction greater progress will be made and better results accomplished by work in the riding hall or outdoor riding court, because the horses go more quietly, the nervousness natural to beginners is greatly lessened, and there is nothing to distract the attention of men and horses. When weather permits the outdoor riding court is preferable to the riding hall.

Where a riding hall or riding court is not available, as in a camp or the field, the work may be conducted in an outdoor rectangle, the corners of which are marked by elevated and conspicuous objects, constructed of such material as not to injure a horse or rider that collides with them. Such a rectangle is of sufficient dimensions (**316**) to enable the riders to exercise with freedom while remaining under the eye of the instructor and within reach of his voice. The instructor changes the ground as soon as the tracks are worn to the extent that the horses follow them mechanically. He avoids placing his rectangle parallel to adjacent rectangles, roads, paths, or fences, so that from the first the rider is compelled to direct his horse.

The riding hall, open court, and outdoor rectangle are referred to in these regulations as the **riding school.**

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In early lessons the men lead their horses to the school and return them to the stable in the same manner. When they have received sufficient instruction they go and return mounted.

As soon as the riders have acquired sufficient confidence in their seat and their ability to stay on a horse riding on a rectangle of extended dimensions, short road marches should be undertaken.

222. In the later period of instruction road marches and cross-country riding should be undertaken, gradually increasing the requirements and difficulties. In the beginning they should take place once and during the last period at least twice per week. During these outdoor exercises riding in long lines, with extended and irregular intervals over broken ground, is the most productive of good results, because it teaches both rider and horse self-reliance, confidence, and initiative. The section should be frequently broken up and the riders sent home or to some designated rendezvous by pairs over different routes.

During the more advanced training out of doors every occasion should be utilized to instruct the men in the care and saving of the horse, the proper tempo or cadence of the different gaits, and their use, depending upon the nature of the ground, as well as elementary instruction in orientation, scouting, carrying messages, making reports, etc.

223. An instructor can handle to best advantage a section of about 12 to 15 men. Instruction becomes imperfect and unsatisfactory when the number exceeds 30.

224. A lesson period for the riding school should not exceed 2½ hours, divided as follows:

Forming on the battery parade, marching to stables or picket line, saddling, bridling, leading out, and reporting mounted and formed at the riding school—20 minutes.

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Actual work under the eye of the instructor—1 hour 30 minutes.

Returning to the stable or picket line, unsaddling, unbridling, caring for equipment, grooming, watering, leading in and marching to the battery parade for dismissal—40 minutes.

The time of the actual work in the riding school should never be reduced to less than 1 hour; for road marches and cross-country riding the minimum should be 2 hours. All men should be impressed with the fact that the proper time to care for horses and equipment is immediately after their use.

SECTION IV.—PRELIMINARY INSTRUCTION.

Horse Equipment.

225. The instructor indicates the different articles of horse equipment, instructs the men in the nomenclature of the various parts, as given in the Handbook, and explains the uses of these parts.

To Fold the Blanket.

226. The blanket, after being well shaken, will be folded into six thicknesses, as follows: Hold it well up by two adjacent corners, the longer edges vertical; double it lengthwise, so the fold will come between the "U" and "S," the folded corner in the left hand; take the folded corner between the thumb and forefinger of the right hand, thumb pointing to the left; slip the left hand down the folded edge two-thirds of its length and seize it with the thumb and second finger; raise the hands to the height of the shoulders, the blanket extended between them; bring the hands together, the double fold falling outward; pass the folded corner from the right hand into the left hand, between the thumb and forefinger, slip the second finger of the right hand between the folds, seize the double folded corner; turn the left, disengaged corner in and seize it with the thumb

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and forefinger of the right hand, the second finger of the right hand stretching and evening the folds; after evening the folds, grasp the corners and shake the blanket well in order to smooth the folds; raise the blanket and hold the upper edge between the chin and breast; slip the hands down halfway, the first two fingers outside, the other fingers and thumb of each hand inside; seize the blanket with the thumbs and first two fingers, let the part under the chin fall forward; hold the blanket up, arms extended, even the lower edges; retake the middle points between the thumb and forefinger and flirt the outside part over the right arm; the blanket is thus held before placing it on the horse.

To Put On the Blanket and Surcingle.

227. The instructor commands: **BLANKET.** Approach the horse on the near side, with the blanket folded and held as just described; place it well forward on his back by tossing the part of the blanket over the right arm to the off side of the horse, still keeping hold of the middle points; slide the blanket once or twice from front to rear to smooth the hair, being careful to raise the blanket in bringing it forward; place the blanket with the forefinger of the left hand on the withers and the forefinger of the right hand on the backbone, the blanket smooth; it should then be well forward with the edges on the left side; remove the locks of mane that may be under it; pass the buckle end of the surcingle over the middle of the blanket and buckle it on the near side, a little below the edge of the blanket.

To Saddle.

228. For instruction, the saddle may be placed 4 yards in rear or in front of the horse. The stirrups are crossed over the seat, the right stirrup uppermost; then the cincha and cincha

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strap are crossed above the stirrups, the strap uppermost. The blanket, without the surcingle, having been placed as previously explained (227), the instructor commands: **SADDLE.**

Seize the pommel of the saddle with the left hand and the cantle with the right; approach the horse on the near side from the direction of the croup and place the center of the saddle on the middle of the horse's back, the front ends of the side bars about three finger widths behind the points of the shoulder blades; let down the cincha strap and cincha; pass to the off side, adjust the cincha and straps and see that the blanket is smooth; return to the near side, run the left hand, back up, down the withers so as to raise the blanket slightly under the pommel arch, in order that the withers may not be pinched or pressed upon; take the cincha strap in the right hand, reach under the horse and seize the cincha ring with the left hand, pass the end of the strap between the ring and safe and through the ring, then up through the upper ring from the outside; if necessary, make another fold in the same manner.

The strap is fastened as follows: Pass the end through the upper ring to the front; seize it with the left hand, place the fingers of the right hand between the outside folds of the strap; pull slowly from the horse with the right hand and take up the slack with the left; cross the strap over the folds, pass the end of it, with the right hand, underneath and through the upper ring back to the folds, then down and under the loop that crosses the folds and draw it tightly; secure the end of the strap.

Another method of fastening the cincha strap is as follows: Pass the end through the upper ring to the rear; seize it with the right hand, place the fingers of the left between the outer folds of the strap; pull slowly from the horse with the left hand and take up the slack with the right; pass the end of the strap

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underneath and draw it through the upper ring until a loop is formed; double the loose end of the strap and push it through the loop and draw the loop taut. The free end should then be long enough conveniently to seize with the hand.

Having fastened the cincha strap, let down the right stirrup, then the left.

The surcingle, if used, is then buckled over the saddle, and should be a little looser than the cincha.

In saddling a horse the cincha must be tightened gradually, and not with violence, a practice that if persisted in renders a horse ill tempered and mean in saddling.

To Remove the Saddle.

229. UNSADDLE: Stand on the near side of the horse; unbuckle and remove the surcingle; cross the left stirrup over the saddle; loosen the cincha strap and let down the cincha; pass to the off side, cross the right stirrup, then the cincha over the saddle; pass to the near side, cross the cincha strap over the saddle; grasp the pommel with the left hand, the cantle with the right, remove the saddle over the croup and place it in front or in the rear of the horse as may be directed, pommel to the front; if in the stable, place the saddle on its peg; grasp the blanket at the withers with the left hand and at the loin with the right; remove it in the direction of the croup, the edges falling together, wet side in, and place it across the saddle, folded edge on the pommel.

Fitting the Saddle.

230. Great care must be taken in the fitting and adjustment of saddles, to prevent sore backs.

There are six axioms in saddle fitting:

1. The withers must not be pinched nor pressed upon.

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2. The central line of the back must have no pressure put upon it.

3. The shoulder blades must have full and unhampered movement.

4. The loins must not carry weight.

5. The weight must be put upon the ribs through the medium of the muscles covering them.

6. The weight must be **evenly distributed** over a surface which extends from the play of the shoulders to the last true rib.

To fit the saddle: (*a*) The saddle, without blanket, is placed in its proper position on the back. It is noted whether the upper or lower edges or the front or rear of the side bars gouge into the back at any place. If this occurs or if the saddle when lifted from the back a distance corresponding to the thickness of the blanket otherwise fails perceptibly to conform to the outlines of the back, the test and remedy described under (*e*) should be made and applied.

(*b*) The existence of wither pressure is determined by blanketing and saddling the horse and placing an assistant in the saddle. The hand is run over the top and along both sides of the withers beneath the blanket. To make the test effective the man in the saddle should lean forward, and the examiner should not be satisfied with anything less than the introduction of his entire hand.

(*c*) It is noted that the central line of the back and also that the loins bear no weight even when the assistant in the saddle leans to the front, rear, or either side.

(*d*) To determine if the blade bones have unhampered movement, the hand is passed underneath the blanket from the front until the play of the shoulder blade can be felt. The fore leg is raised and advanced to its full extent to the front by an assistant while the hand is in this position. If this can be done while

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the man in the saddle is leaning forward without pinching the fingers between the side bars and the shoulder blade, the fit in this respect is satisfactory. The test should be made on both shoulders. If the fingers are pinched, the blade bones will also be pinched and the action of the horse restricted. To correct the difficulty the saddle must be raised, assuming that it is at the proper place on the back, by placing under it a greater thickness of blanket or by attaching pieces of felt under the side bars.

(*e*) To ascertain whether the pressure of the side bars is evenly distributed the saddle is ridden in for half an hour or more. On completion of the ride the saddle is carefully ungirthed and lifted from the blanket without disturbing the latter in any way. The blanket will be found to bear the imprint of the side bars, and an examination of this depression will show at a glance whether the bars press evenly from top to bottom and from front to rear. This examination must be made quickly as the elasticity of the blanket soon causes it to lose the impression of the side bars. Any irregularity in the fit of the side bars may be remedied by the introduction of pieces of felt to fill up the spaces between the side bars and the blanket. With very little practice these pieces of felt may be cut to the required shape and thickness with a very sharp knife. Some edges will need to be as thin as a knife edge; other parts may require the addition of more than one thickness. After determining where these pieces of felt are to rest they are attached to the side bars with glue and bound in place by sheepskin tacked to the side bars. The most radical alterations in the fit of the side bars can in this manner be effected. The method is simple and quick and can easily be performed by the average battery saddler.

(*f*) The cincha should be sufficiently tight to keep the saddle in its place and no tighter. Generally speaking, correct cinch-

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ing has been obtained when the flat of the hand is easily admitted under the quarter ring safe. With most horses, after exercising for a while, the cincha will be found too loose, and should be taken up.

A tight cincha restricts the animal's breathing and also brings too much pressure upon and strangles the tissues. Especially is this apt to be the case under the quarter and cincha ring safes, where strangulation soon causes lumps, puffs, and sores.

(*g*) Care is taken that the quarter straps are so adjusted and the cincha so selected that the cincha ring safe will be a sufficient distance from the quarter ring safe to avoid pinching and galling the skin between them.

To Put On the Double Bridle.

231. BRIDLE: Take the double reins in the right hand, the crownpiece in the left; approach the horse on the near side; slip the reins over his head, letting them rest on his neck; take the crownpiece in the right hand and the lower left branch of the curb bit in the left, the forefinger against the mouthpiece; bring the crownpiece in front of and slightly below its proper position; insert the left thumb into the left side of the mouth above the tush; press upon the lower jaw, insert both bits by raising the crownpiece, then with the left hand draw the ears gently under the crownpiece, beginning with the left ear; arrange the forelock, secure the throat latch and the curb chain, taking care to adjust them properly.

The bridle with snaffle bit only, used on team horses, is put on in a similar manner.

A bridle with curb bit only is not permitted to be used on the horses of individually mounted men, because the curb when used alone is a powerful instrument requiring such dexterity in its

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use that only an expert horseman on a perfectly trained horse is capable of using it with sufficient delicacy and discretion to obtain perfect control without injuring the horse.

A horse quickly resents and is easily frightened by abrupt or sudden movement about his head. Bridling should therefore be done in a most deliberate and careful manner. The ears are especially sensitive, and extreme care must be used in drawing them under the crownpiece and into their place. A reliable test that a horse has not been mistreated in bridling is that he permits, without sign of fear or resentment, the gentle stroking of his ears.

232. Except in the field, or when equipped for field service, or when the duty is such as to make it necessary to tie up a horse, the halter is taken off before bridling, the reins being first passed over the neck.

If the halter is not taken off, the halter strap is tied in the near pommel ring, or, if the horse be not saddled, around his neck. When the halter is to remain on, care should be taken that the halter rope is untied from the manger before attempting to bridle a horse that is liable to pull back.

To Fit the Snaffle Bridle.

233. (*a*) The cheek straps are adjusted so that they are of even length and so that the snaffle rests easily in, but does not draw up the corners of the mouth. A mouthpiece that is too low strikes the tushes and makes them sore; one that is too high causes the horse discomfort and makes the corners of his mouth sore.

(*b*) The browband is examined. If it is too short, it causes the sensitive skin at the base and back of the ears to be galled or cut by the crownpiece. If it is too high on the crownpiece, it causes the same trouble at the base and sides of the ears.

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(*c*) The throatlatch is buckled loosely, being only sufficiently tight to prevent the crownpiece from slipping over the horse's ears. Generally speaking, it should permit the entire flat of the hand to be inserted between it and the throat when the horse's head is reined in. A tight throatlatch interferes with the large blood vessels of the neck, with the gullet, and also with the windpipe.

(*d*) The mane and forelock are carefully smoothed out under the crownpiece to avoid causing a sore at the poll and also to present a neat and tidy appearance.

To Fit the Double Bridle.

234. (*a*) The snaffle is fitted as described in the preceding paragraph.

(*b*) A curb bit is selected with a mouthpiece of such length that the branches bear easily against the horse's lips. A narrow bit pinches the lips, while a wide one works about and bruises the lips and the bars. The mouthpiece is best examined for width by inspecting it from the underside of the lower jaw.

(*c*) The cheek straps are adjusted so that the mouthpiece of the bit rests as near as possible opposite the chin groove, but touching neither the tushes nor the corners of the mouth. Generally speaking, the bit should rest about 1 inch above the tushes of horses and about 2 inches above the corner teeth of mares. It rides below the snaffle.

(*d*) The curb chain is fastened outside and below the snaffle. It must be twisted to the right until it lies flat, and it should rest in the chin groove opposite the mouthpiece of the bit. If not properly adjusted, it will have a tendency to ride up and press upon the sharp bones of the lower jaw. The curb chain should be loose enough to admit the flat of two fingers between it and the chin groove when the branches of the bit are in line

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with the cheek straps. When brought to bear the branches of the curb bit should make an angle of about 45° with the line of the horse's mouth.

(*e*) The throatlatch and brow band are fitted as directed in paragraph 233.

To Remove the Bridle.

235. UNBRIDLE: Unbuckle the throatlatch. Grasp the middle of the reins with the crownpiece in the right hand. Take hold of the bit or bits with the left hand. Carefully and gently slip the crownpiece over the ears, at the same time steadying the bits with the left hand so they will not roughly strike against the tushes or teeth. Straighten the reins out together and fold them over the crownpiece. Hang the bridle on its peg.

To Stand to Heel.

236. STAND TO HEEL: Each man stands at attention 1 yard in rear of and facing his heel post. At the picket line he is 1 yard in rear of and facing his horse.

To Stand to Horse.

237. STAND TO HORSE: Each man places himself, facing to the front, on the near side of his horse, eyes on a line with the front of the horse's head, so that he can see along the front, and takes the position of attention, except that the right hand, back uppermost, grasps both reins, forefinger between them, about 6 inches from the bit. The reins are on the horse's neck.

The left and right sides of the horse, facing to his front, are called the **near** and **off** sides, respectively.

To Lead Out.

238. The men being at stand to horse in the stable or at the **picket** line, and the horses equipped with snaffle bridles, the

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instructor indicates the place of formation and commands: **LEAD OUT.**

Each man, holding his hand well up and firm, leads his horse, without looking at him, to the place designated by the instructor. If the horse shows a disposition to rush or to resist being led, the soldier takes the snaffle reins from the horse's neck, takes the end of the reins in the left hand and with the right hand holding the reins near the bit leads the horse as before. When leading through a low or narrow doorway, the horse should be quieted by the voice or caresses and not allowed to pass through hurriedly. To prevent the horse from rushing through a narrow doorway the instructor may direct the soldier to face toward the horse, holding one rein in each hand close to the bit, and lead him by stepping backward; after passing the doorway the soldier leads the horse as before.

Upon arriving at the place designated for the formation, the instructor disposes the men upon a line at intervals of one horse length, men at **stand to horse** and horses correctly disposed and perpendicular to the line of men.

A horse is correctly disposed when he stands squarely on all four feet, having his head, neck, and body in line.

Alignments.

239. The men being in line at a halt at stand to horse, the instructor sees that the men on the flank toward which the alignment is to be made are in the desired position and commands: 1. **Right (left)**, 2. **DRESS**, 3. **FRONT.** Executed as in The Soldier Dismounted, except that the left hand is not placed on the hip, and each man moves his horse forward or backward, as may be necessary, to align him. The instructor may place himself on either flank and give a general alignment by ordering individual men to move their horses backward or forward.

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To Mount.

240. With saddle.—The soldier being at stand to horse: 1. **Prepare to mount,** 2. **MOUNT.** At the command **prepare to mount,** face to the right, take a step to the right to be opposite the shoulder of the horse; at the same time seize the end of the reins in the right hand and pull them taut enough to give a gentle, even bearing on the horse's mouth; cross the reins flat on the crest and grasp them with the left hand, which also holds a lock of the mane. Place the left foot in the stirrup, assisted by the right hand if necessary, bring the left knee against the saddle, and place the right hand upon the cantle.

At the command **MOUNT** rise by an effort of the right leg aided by the arms, the left knee bent and pressed against the saddle, the upper part of the body inclined slightly forward to prevent the saddle from turning; bring the right foot by the side of the left. Change the right hand to the pommel, pass the right leg, knee bent, over the croup without touching it, and sit down lightly in the saddle. Put the right foot in the stirrup, assisted by the right hand if necessary; take the reins as hereafter prescribed.

The instructor takes care that the rider in adjusting the reins provokes no movement and deranges in no manner the position of the horse's head.

The instructor cautions the rider to avoid touching the horse with the left toe in mounting. This fault begets nearly all the resistance of the horse to standing quietly while being mounted.

241. Without saddle.—Similarly executed (**240**) except that the right hand is placed on the back near the withers. At the command **mount,** the soldier springs upward and forward, bearing the weight upon the hands and wrists. He remains for a moment in this position, then throws the right leg, knee bent,

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over the croup without touching it and sits down lightly on the horse's back.

242. With saddle having stirrups crossed or detached.—Executed as prescribed for mounting without saddle, except that the right hand is placed on the pommel of the saddle.

243. To mount from the off side.—Executed as in mounting from the near side but by inverse means.

244. If the command be **mount** the men execute all that has been prescribed for **prepare to mount** and **mount.**

To Dismount.

245. With saddle.—1. **Prepare to dismount,** 2. **DISMOUNT.** At the command **prepare to dismount,** pass the right rein into the left hand and grasp with this hand a lock of the mane; remove the right foot from the stirrup and place the right hand on the pommel.

At the command **dismount,** rise upon the left stirrup, pass the right leg, knee bent, over the croup without touching the horse, and bring the right foot by the side of the left, the left knee against the saddle, the upper part of the body inclined slightly forward. Descend lightly to the ground and take the position of **stand to horse.**

246. Without saddle.—Similarly executed (**245**) except that the right hand is placed on the back near the withers. At the command **dismount,** rise upon the hands and wrists; pass the right leg, bent, over the croup without touching it, carry it to the side of the left; remain a moment in this position and come lightly to the ground, the heels joined, the knees bent. Take the position of **stand to horse.**

With saddle having stirrups crossed or detached.—Executed as prescribed for dismounting without saddle, except that the right hand is placed on the pommel of the saddle.

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247. To dismount on the off side.—1. **To the right.** 2. **Prepare to dismount.** 3. **DISMOUNT.** Executed as in dismounting from the near side but by inverse means.

248. The men are frequently practiced in mounting and dismounting on the off side.

249. If the command be **dismount,** the men execute all that has been prescribed for **prepare to dismount and dismount.**

Holding the Reins.

250. In both hands.—The snaffle reins are held one in each hand, the rein coming into the hand under the little finger and passing out over the second joint of the forefinger, on which the thumb, slightly bent, presses and holds it. The bight of the reins falls to the front and right. The reins bearing equally should be so held that the rider feels lightly the horse's mouth, the forearms horizontal, angle between arm and forearm approximating 90°; elbows slightly to the rear, with the fleshy part of the forearm resting lightly against the body; the hands closed, backs outward and vertical; wrist and back of hand straight and in continuation of the forearm; hands approximately 9 inches apart and carried about one hand's breadth above the withers.

The double bridle reins are held two in each hand, as explained for the single reins above, except that the bit rein comes into the hand above the little finger, which separates the two reins.

In one hand.—The snaffle reins are held as explained for two hands, except that the right (left) rein comes into the left (right) hand above the little finger, which separate the two reins.

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In the left hand the double bridle reins are held as explained for both hands, except that the right reins come into the hand, one on each side of the second finger, the snaffle rein uppermost, all four reins being pressed upon the second joint of the forefinger by the thumb.

In the right hand they are so held that there is one rein above each finger, left snaffle rein uppermost, and that four reins come out under the little finger.

To Take the Reins in One Hand.

251. 1. In left (right) hand, 2. TAKE REINS.

The snaffle reins.—Place the left hand opposite the middle of the body and place in it the right rein, holding the reins as explained **(250)**.

The double reins.—Place the left hand opposite the middle of the body; turn the right wrist to the left until the back is up; carry the right hand to the left and insert the second finger of the left hand between the right reins, holding the reins as explained for the left hand **(250)**.

To take the reins in the right hand they are first taken in the left as just described. Then turn the left hand back up and insert the extended fingers of the right hand between the reins so that there will be one rein above each finger, holding them as explained for the right hand **(250)**.

To Retake the Reins in Both Hands.

252. The reins being in the left (right) hand: **1. In both hands. 2. TAKE REINS.** Grasp the right rein with the right hand and hold both reins as heretofore prescribed.

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To Adjust the Reins.

253. The reins being in both hands.—To shorten the reins the rider brings the wrist together and grasps with one hand, above and near the opposite thumb, the rein that he desires to shorten. To lengthen the reins, the rider permits them to slip through his hands until the proper bearing is secured.

The reins being in one hand.—To lengthen or shorten the reins the rider holds the bight with the hand that was free, while the other one slides along the reins to secure the proper bearing.

To Drop and Retake the Reins.

254. The instructor causes the reins to be dropped and retaken at the commands **DROP REINS** and **RETAKE REINS.**

At the first command the rider drops the reins behind the pommel or on the horse's neck near the withers and lets the hands fall by the side. It will frequently be advantageous to knot the reins before dropping them on the horse's neck.

The Stirrups.

255. The stirrups are properly adjusted when, the rider being properly seated and the legs falling naturally, the tread of the stirrup is about 1 inch and a half above the top of the heel of the shoe.

The stirrups should bear only the weight of the leg; about one-third of the foot should be inserted in the stirrup, so that the ball of the foot rests on the tread, the heel lower than the toe.

The toe is inserted in the stirrup so as to cause the flat of the stirrup strap to rest against the leg.

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Placing too much weight on the stirrup disturbs the seat and contracts the leg, hindering its freedom of action.

If the toe is not inserted far enough the rider risks losing his stirrup; if inserted too far suppleness is diminished.

For the extended gallop, for the use of weapons, and for leaping obstacles the foot is inserted fully in the stirrup.

The instructor teaches the soldier how to adjust his stirrups by using his arm to measure the proper length of strap.

Position of the Soldier Mounted.

256. The position described below should be considered a standard toward which all riders should gradually approximate.

The buttocks bearing equally upon the saddle and as far forward as possible.

The thighs turned without constraint upon their flat side, clasping the horse evenly and stretched only by their own weight and that of the lower legs.

The knees bent and flexible.

The lower legs falling naturally, the calves in contact with the horse without pressure; the toes dropping naturally when the rider is without stirrups.

The back supple and never hollowed.

The upper part of the body easy, free, and erect.

The shoulders thrown back evenly.

The arms free, the elbows falling naturally.

The head erect without stiffness.

Eyes alert and sweeping the horizon.

The reins held as heretofore prescribed.

This position may be modified by the instructor to suit varying conditions and unusual conformations.

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257. The body and the lower legs are movable and should be under the control of the rider, acting intermittently as aids for guiding the horse or as a means of combatting his resistance.

The thigh, on the other hand, should remain fixed immovably to the saddle except while posting at the trot. This fixity should be obtained, not by the pressure of the knees, but by the clinging of the buttocks, which is secured by the suppleness of the loins and the relaxation of the thighs.

If the buttocks are too far back, the rider is unable to conform to the movements of the horse and carries forward the upper part of the body. This defect is remedied by sitting well forward in the dip of the saddle.

If the thigh is too nearly horizontal, the rider is doubled up and his power of action diminished; if the thigh is too nearly vertical, the rider is on the crotch and lacks ease.

To sum up: The rider should take a sitting position with the thighs inclined downward.

The various defects of position are overcome by suitable suppling exercises.

The Rests.

258. Being at stand to horse, the commands are: **AT EASE** and **REST,** which are executed as prescribed in The Soldier Dismounted, except that each soldier retains his hold of the reins to keep his horse in place.

Being mounted and at a halt, the commands are: **AT EASE** and **REST**; if marching, **ROUTE ORDER.** At the command **at ease** the soldier may turn his head and make slight changes of position, but preserves silence.

At the command **rest** or **route order,** the soldier may turn his head, may talk, and make slight changes of position, but must not lounge on his horse.

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To resume the attention: 1. Squad, 2. **ATTENTION.** The soldier, if dismounted, takes the position of stand to horse; if mounted, he takes the position of the soldier mounted.

To Dismiss the Squad.

259. The squad being in line at stand to horse: 1. **By the right (left, or right and left),** 2. **FALL OUT.**

The man on the right leads his horse 1 yard to the front and then directly to the stable or picket line. Each of the other men executes in succession the same movement so as to follow the horse next on the right at a distance of 1 yard.

Being in column of files or twos, at the command **FALL OUT,** the leading rider or the rider on the right of each two leads out as prescribed and is followed by the other riders in turn.

The men remove, clean, and put the equipments in place, and care for and secure their horses under the direction of the instructor.

The instructor, having satisfied himself by inspection that the horses and equipments are properly cared for, and that the precautions required for the care of horses on their return from exercise have been observed, orders that the men be fallen in, marched to the battery parade, and dismissed.

SECTION V.—ELEMENTARY TRAINING IN EQUITATION AND HORSEMANSHIP, FIRST PERIOD.

1. Establishing Confidence.

260. The first object to be attained in elementary instruction in equitation is to establish the confidence of the rider. Many recruits, especially those who have never before had any

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experience with horses, entertain an instinctive and unreasoning timidity which can be overcome only by slow, careful, and quiet instruction involving judgment and tact on the part of the instructor.

Before a recruit is allowed to mount a horse, his confidence can and should be gained to a considerable degree by strengthening his riding muscles through the suppling exercises (264–278), performed on a wooden horse; at the same time he should be taught the correct seat (283–284). This work is under a riding instructor or under a gymnastic instructor who is a good horseman.

The exercises on the wooden horse may be usefully employed during subsequent training, but should not immediately precede or follow a riding lesson. Exercising tired muscles is not only useless but harmful.

Only quiet, gentle, and well-trained horses are used in the instruction of recruits. Effort must be made to avoid falls or other accidents which might spoil the beginner's nerve and so retard his progress.

With this object in view the beginner is permitted to use the same horse for the first few mounted lessons. When it is seen that he is beginning to understand his mount, horses and riders are changed, usually with each lesson, and the training of a soldier should be considered incomplete and unsatisfactory until the average animal goes quietly and pleasantly with him at any pace.

For the first few lessons, both as a measure of security and to avoid weariness, stirrups should be used. In some cases greater security is also afforded if the stirrups are connected by a strap passing under the horse's belly and of such length that the man's knees are not drawn away from the saddle.

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The strap saves falls because it prevents the rider's legs from flying out far in any direction and the confidence it instills enables him to acquire balance more quickly.

Later lessons, both for the purpose of acquiring confidence and learning balance, must include riding without stirrups. Confidence is also imparted through riding without reins. This is one of the best ways for a beginner to acquire a good strong seat which is independent of the reins. Fixity of the seat helps to produce good hands.

The early mounted lessons are conducted at a walk. The trot and then later the gallop are taken up as soon as practicable, but not until the instructor judges that the confidence acquired justifies proceeding to the faster paces.

Exercises Favorable to Imparting Confidence.

261. 1. Suppling exercises (**264–278**) on the wooden horse.

2. Mounting the beginner on a quiet, gentle, and well-trained horse held and led by a dismounted or mounted assistant.

3. The exercises prescribed in paragraphs 317 to 335, executed in the early lessons at a walk, then progressively as confidence is established at the increased gaits.

4. Suppling exercises first at the halt, then progressively as confidence is established, at the walk, trot, and gallop.

2. Suppling the Rider to Secure Independence of Movement in Hands, Body, and Legs, and to Combat Rigidity.

262. Suppling exercises play an important part in the instruction of the rider, but their use demands tact. Used by some instructor, without order or method, or for too prolonged a period, they give only mediocre results; by others, however, they very quickly improve even the least gifted riders.

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Considered together the suppling exercises have a triple end, as they serve to obtain—1, general suppleness; 2, suppression of involuntary movement; 3, regularity of position.

The instructor chooses and groups for these three objects the exercises which to him appear most suitable.

In the first two cases the exercises commanded are addressed to the whole section, since the instructor seeks a general result. In the last case, however, the proper exercises should be selected for the individual rider, since it is a question of overcoming an individual defect. It must be remarked also that some of the exercises oppose each other, and when they are used the object sought must be exactly known. Thus the elevation of the thighs, particularly favorable in placing the seat, evidently destroys the benefits from the rotation of the thighs destined to bring the flat surface to bear and to lower the knee.

At the end of several weeks of well-conducted instruction confidence is established, the contractions diminish, the riders commence to find and keep a seat in the saddle, their joints are more supple; in consequence their movements are best controlled. The position is established.

The suppling exercises on the horse are taken up as soon as the rider has acquired a fair degree of confidence in his seat, and they are then regularly practiced throughout the entire continuance of riding instruction.

The exercises are performed in the saddle usually with stirrups crossed or detached; always with snaffle bridle and never with spurs. The reins are held or not at the discretion and direction of the instructor. When the exercises are suitable, and when they are being executed without reins, the instructor causes the rider to hold one or both hands as though they were actually riding with the reins.

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The reins when held should neither flop nor be too tight. In a word the instructor should seek to teach his pupils just to feel the horse's mouth, while leaving the horse the free use of his neck by following its movements with the hands. This feeling, in developing little by little, will serve to establish the principle of gentle contact of the hand with the horse's mouth. It must be constantly spoken of and sought from the beginning. In a short time the man follows instinctively the movements of the head and neck.

Constant effort should be made to overcome stiffness of the arms and shoulders, which is frequently the cause of a heavy hand.

The instructor is especially careful that the movement of one part of the body does not react on any other part; for example, that an exercise of the right arm does not disturb the left arm or the position of the loins or legs.

263. The exercises herein indicated are recommended as the most useful, but they are not the only ones in which the men may be exercised.

Instructors may add other suitable exercises for the purpose of varying the work and adding to its interest.

Any movement is proper which engages the rider's attention and leads him to forget that he is on horseback and thereby brings about relaxation.

The end desired is attained by the frequency and variety of the exercises; the instructor must carefully avoid prolonging a movement to weariness, which inevitably brings on rigidity.

He must likewise avoid any movement that would result in lifting the buttocks from the saddle or in sinking the loins and hollowing the back.

The exercises are first given at the halt, then, except as indicated and as confidence is established, they are progressively taken up at the walk, trot, and gallop.

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To put the squad in march the instructor designates a man, preferably an enlisted assistant, who is a noncommissioned officer or an instructed private and who is mounted on a steady-gaited horse, to act as leader, and causes him to take the track; he then causes the other men to take their places in column of files behind the leader. The riders are restricted to letting their horses follow those in front.

At first the pace of the trot should be moderate. It may be increased to normal when the riders have acquired sufficient steadiness of seat to maintain a correct position at that gait.

As soon as the riders have acquired a fair security of seat at the trot and have grown accustomed to a fast gait, the instructor begins to train them at the gallop. The first lessons are given on a large circle so that the horses will have less tendency to pull. The men retain their reins and stirrups until they have gained confidence.

The gallop should be employed very early in the instruction, as it is the most favorable gait for suppling the loins.

Every effort should be made to maintain good humor; it is the best aid to suppling. Instructors and pupils must ever bear in mind that the greatest obstacle to good horsemanship is **bad temper** in either rider or mount.

In those mounted suppling exercises, the purpose of which is to push the buttocks to the front, to spread the thighs at the hips, or to lower the position of the thighs and knees, the best results are always obtained by slightly elevating the toes and depressing the heels during the exercise. On completion of the movement the rider then permits the toes to fall and the leg and foot to hang naturally.

To execute the exercises a movement is announced and the command **EXERCISE** is given. The movement is then continued

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and repeated until the command **HALT.** The reins when held are shifted as necessary, without command.

Suppling Exercises.

FLEXION OF THE LOINS.

264. BEND TO THE RIGHT (LEFT): The rider, without deranging his seat, legs, or the position of his hands, slowly inclines his body to the right by bending at the loins. The head, shoulders, and arms conform to the movement of the trunk. He returns slowly to the initial position.

This exercise can profitably be used to combat general contraction, stiff back, stiffness in the loins.

265. STROKE RIGHT (LEFT) FLANK: The rider sits down in the saddle by pushing the buttocks forward; turns the body at the loins, and leaning backward but not to the side, places the right hand as low as possible on the horse's flank.

To combat general contraction, stiff back, leaning forward, letting buttocks rise and go too far to the rear, riding on crotch, legs sticking too far to the front, stiffness in the loins.

266. 1. RIGHT (LEFT) HAND ON CANTLE, 2. LEAN BACK: The rider places the palm of the indicated hand on the cantle of his saddle so that the arm rests against his body at or below the loins. He pushes his legs and knees well down and elevates his toes. Without deranging the position of his legs or thighs, and without pulling on the reins, he slowly leans to the rear as far as he can, touching the croup of the horse, if possible, with his head, which is well thrown back. He returns slowly to the initial position. Executed only at the halt or the walk.

To combat general contraction, stiff back, thighs carried too high, legs pushed too far to front. It is also the best exer-

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cise for suppling the muscles of the groin. This exercise should not be used until the position of the buttocks and thighs has been fairly well established by other simple flexions.

ROTATION OF THE LOINS.

267. RIGHT (LEFT) HAND STROKE LEFT (RIGHT) HAUNCH: The rider turns to the right at the loins, being careful not to derange the seat or the position of the other hand or of the thighs, and strokes the left haunch with the right hand. He avoids opening out the other elbow or pulling on the reins. He turns his head, but is careful to keep it erect.

To combat general contraction, stiff back, unsteady hands, or involuntary movement of the rein hand.

STRENGTHENING THE THIGHS.

268. GRIP HORSE WITH THIGHS AND RELAX: The rider without deranging seat, body, legs, or arms, squeezes his thighs together as though he wished to crush the horse between them.

To combat loose, wobbly, insecure seat, insufficient strength in the leg muscles.

ROTATION OF THE ARMS.

269. ROTATE RIGHT (LEFT) ARM VERTICALLY: The rider takes a deep breath while extending his arm upward to its full extent, where he pauses a moment, and then describes slowly, with uniform movement, large vertical circles from front to rear and from below upward, exhaling and keeping the head erect and high while the arm is descending.

To combat general contraction, stiffness in the shoulders, contraction in the arms, depressed chest, round shoulders. This exercise is especially valuable for giving the upper body a proper poise and posture upon the hips and for opening the chest and shoulders.

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270. ROTATE RIGHT (LEFT) ARM HORIZONTALLY: The rider extends his arm forward, palm up, and describes slowly, with uniform movement, large horizontal arcs from front to rear and back to the front constantly, keeping his eye upon the palm of the hand. The seat and thighs must remain fixed, the upper body rotating at the loins. The other hand must remain in place. The rider avoids opening out the other elbow or pulling on the reins.

To combat general contraction, stiffness in the shoulders and in the loins, contractions in the arms.

Properly executed this exercise becomes at once the simplest and one of the best means of acquiring balance. To be executed properly the rider must constantly keep his eyes upon the palm of the hand. Its most important use is during jumping to overcome the involuntary contractions and movements usually shown by the beginner. The exercise should be begun before the obstacle is reached, continued throughout the jump and until at least 30 yards beyond the obstacle.

CARRYING THE HEAD.

271. TURN HEAD RIGHT AND LEFT: The rider sits erect on his horse with his head up and eyes sweeping the horizon. While in this position and without deranging any other part of his body he slowly turns his head as far as he can first to the right, then to the left.

To combat leaning to the front and carrying the head and eyes too low.

272. BEND HEAD FORWARD AND BACKWARD: The rider sits erect on his horse with his head up and eyes sweeping the horizon. While in this position and without deranging any other part of his body he throws the head up and back as far as he can, returning slowly to the initial position.

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To combat leaning to the front and carrying the head and eyes too low.

ROTATION OF THE THIGHS.

278. ROTATE RIGHT (LEFT) THIGH: The rider carries the knee outward from the saddle, then moves it to the rear, straightening the leg, toes slightly elevated, heels depressed; he then turns the knee in as much as possible and replaces the thigh flat upon the saddle. All muscles are then relaxed and the leg and foot are permitted to hang naturally.

To combat general contraction, leaning to the rear with thighs rising to the front, rolling the thighs away from the saddle and holding on with the calves, toes turned out too much, knees bent too much, daylight under knees.

FLEXION OF THE THIGHS.

274. 1. HANDS ON POMMEL, 2. RAISE RIGHT (LEFT) THIGH AND KICK TO THE REAR: The rider places both hands on the pommel and draws himself forward and into the bottom of his saddle. He raises the thigh to the front and slightly away from the horse's side, then with toe raised, heel well pushed down, he kicks to the rear as if to strike between the horse's hind legs; he straightens the entire leg in the direction of the horse's hock. He slowly brings the flat of the thigh to its position against the saddle.

To combat general contraction, leaning to the rear with thighs rising to the front, rolling the thighs away from the saddle and holding on with the calves, toes turned out too much, knees too high, daylight under knees.

RAISING THE THIGHS.

275. RAISE RIGHT (LEFT) THIGH: The rider raises the knee only so much as is necessary to detach the thigh and leg from the saddle. He slowly returns to the initial position.

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To combat lack of independence in the use of the legs, leaning to the front and riding on the crotch.

276. RAISE BOTH THIGHS: The rider raises both knees only so much as is necessary to detach the thighs and lower legs from the saddle: he inclines the upper part of the body backward very slightly, maintaining a convex bend at the small of the back. If the rider is sitting too far back in the saddle, the instructor directs him to draw himself forward by grasping the pommel for a moment.

In order to maintain his balance and seat in this position, the rider is compelled to relax and be flexible and supple.

When his equilibrium is well established, the rider gently replaces his thighs upon the saddle, being careful to keep his loins in the same position as during the movement.

This exercise fixes the seat and the loins in place and puts them in the proper position. It is executed only at a walk or at a slow trot.

To combat general contractions, stiff back, leaning forward and riding on the crotch, sitting too far back in the saddle.

FLEXION OF THE LEG.

277. FLEX RIGHT (LEFT) KNEE: The rider bends the leg slowly without deranging the position of the knee or that of the body.

To combat general contraction, lack of independence in the use of the legs, riding on the crotch.

FLEXION OF THE ANKLE.

278. FLEX RIGHT (LEFT) ANKLE: The rider traces with the designated foot, by a slow and uniform movement, a circle from below upward and from outward inward without disturbing the position of the leg.

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To combat general contraction, stiffness in the ankle joint, lack of independence in the use of the legs, toes turned out too far, knees and thighs rolled away from contact with the horse, holding on with the calves.

Mounted Gymnastics.

279. Mounted gymnastics comprise exercises that, if properly conducted and not pushed beyond the capabilities of the average man, are valuable for suppling the rider and imparting confidence. Those exercises that may occasion hard falls or those that a few men can do and others can not do are destructive of confidence and harmful to progress in equitation, since the soldier who can not do them is prone to think that he is too poor a gymnast to be a good rider. The exercises, then, should be such that every man, with a little practice, can perform them with a fair degree of proficiency.

Mounted gymnastics in themselves are not an object of instruction. They are but a means to an end and must be so considered.

The exercises outlined below are good, though not the only ones that the instructor may employ. They are divided into two groups, those with the horse in place and those with the horse in motion. The men are in shirts and gymnasium shoes and without hats.

Exercises with the Horse in Place.

280. These exercises may be performed on any gentle horse. The reins are knotted and placed on the neck. In some cases it may be necessary for an assistant to stand at the horse's head. The animal may be bareback or saddled with stirrups detached.

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1. Mount and dismount, or inversely.

2. To the right, mount and dismount, or inversely.

3. Being mounted, faced to the front, place the hands on the pommel or the withers, then rise on the hands and extend the legs to the rear until about 1 foot above and parallel to the horse's back, then immediately snap them forward, keeping them close to the horse's sides and regain the natural seat. This exercise is very good for obtaining a deep position of the knees.

4. Being mounted, faced to the front, extend legs to the rear, cross them, and regain seat faced to the rear. This is called the shears.

5. Being mounted, faced to the rear, place hands on pommel or withers, extend the legs, execute the shears over the croup, and face to the front.

6. Being mounted, faced to the front, lean forward and place the right or left shoulder on the withers, extend the legs upward, and stand on the shoulder. From this position spring to the ground or regain the natural seat.

7. Being mounted, faced front or rear, swing one leg over neck or croup and take the side mount. In the side mount the position of the body and legs is approximately that which is assumed in a side saddle.

8. Being mounted, faced to the rear, place hands on croup and leap to the ground behind the horse.

9. Being mounted, faced to the front, squat on both feet. From this squatting position stand up, then pressing feet and legs hard against the horse's sides slide slowly down into the seat. This exercise is good for strengthening the thighs.

10. Being in rear of the horse, take a short run, place hands on croup, and leap into seat faced to the front.

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11. Same, doing shears while executing the leap, and land on the horse's back faced to the rear.

12. Being mounted, faced to the front, bend to the front and downward and while one hand holds a lock of mane, reach with the other as near to the ground as possible, keeping the legs and buttocks approximately in place.

Exercises with the Horse in Motion.

281. These exercises are best performed with a specially selected and trained horse on the longe on a large circle. The horse is preferably rigged with an improvised leather girth, held in place by a standing martingale and having a leather handle on each side of and about 6 inches below the line of the back. To prevent the girth from turning it must have a pommel arch. In order to make the animal go steadily and smoothly the side reins should be fastened to the girth.

The gait used should be a very slow, steady gallop. For a section of 16 men two horses should be kept going at a time, and, as the work is very hard on them, they should be changed for others at the end of 15 minutes. For 16 men one-half hour of any one lesson period is sufficient time to devote to this instruction.

1. Being mounted, execute any of the suppling exercises.
2. Dismount and mount faced to the front.
3. Being mounted, extend the legs to the rear.
4. Being mounted, face front or rear, throw leg over neck or croup and take the side mount.
5. Being mounted, execute any of the suppling exercises while the horse goes over a 1½ to 2 foot jump.
6. Being mounted double, man in rear dismounts and mounts.
7. Being mounted double, man in rear dismounts and mounts standing.

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8. Dismount and mount faced to the rear.

9. From the side mount facing to the front, dismount and mount facing to the front or rear.

10. Being mounted, place outside foot through outside handle, grasp inside handle with outside hand, and reach for some object on the ground.

282. The rider when dismounting, vaulting, or leaping, grasps a lock of mane in front of the withers with the hand on the side toward which he intends to dismount, and grasps the handle on the same side with the other hand. During the exercises, when dismounted, he keeps pace with the horse at the latter's shoulder by means of the galloping step, which he executes, keeping his hands in place, by a succession of leaps, rising and alighting with the rise and fall of the forehand of the horse, keeping the left or right foot in advance according as he is on the left or right side of the horse, and supporting his weight on the balls of the feet.

To secure a proper leap for vaulting back onto the horse, the rider, whether he leaps from the galloping step or from his landing place, plants his feet squarely together, facing the front, and makes the leap from both feet.

A proper leap can not be made if the elbow nearest to the horse is carried up on the animal's back. This elbow must be down along the horse's side, as otherwise the man is too close to and jumps against his horse in trying to make the vault.

When mounting double, with the horse in motion, the man on the ground grasps the rider's belt with the hand nearest the horse and the rider's elbow with the other. The rider takes care to assist in the leap by pulling strongly against the dismounted man as the latter springs from the ground.

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3. Establishing a Correct and Firm Seat Independent of the Reins.

283. The successful application of the leg aids depends upon the seat, which may be defined as the ability of the rider to keep his balance under all circumstances, whatever the reaction of the horse. A good seat is the first essential because it is the basis of stability and therefore of confidence. Its attainment is aided by the acquirement of the correct position of the soldier mounted (**256–257**) by the suppling exercises, and by much riding without reins or stirrups.

The rider's position is in all probability correct if he has a good, firm hold with the upper leg, his legs and heels are well shoved down, his feet are approximately parallel to the horse's side, his calves have a light feel of the horse's sides at about the rear edge of the girth, and his stirrup straps hang vertically.

The importance of getting the lower legs to the rear as indicated can not be overestimated. They are the logical rudders for the horse, as they control practically all of his body in rear of the forehand. They drive his haunches under him, thus assisting him to start, back, stop, turn, or jump.

A light pressure of the calf must be maintained against the horse's side, for otherwise the rider can not apply his legs with sufficient nicety to bring his horse to a high state of responsiveness. If a horse is too sensitive to the legs or nervous, and is ridden with legs free from the sides, except when a movement is desired, the animal becomes unsteady, due to lack of support from the legs and to their irregular application.

Many men find trouble in keeping the stirrup straps vertical and the heels lower than the toes. Both difficulties are due to the thighs working up toward the horizontal and the seat sliding out behind. This fault is corrected by pushing the buttocks

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forward into the deepest part of the saddle, getting the heels lower than the toes by a movement of the ankle joint; then, still keeping the heel in this position, bending the knees so as to carry the feet to the rear until the stirrup straps are vertical. In very difficult cases the stirrup straps should be tied to the girth, so as to hang vertically. The instructor knows that the position of the leg is correct when, with the buttocks shoved forward, the stirrup strap hangs vertically or when a vertical line dropped from the front of the rider's shoulder is tangent to his heel. The rider knows that his legs are in the proper position when, with his buttocks shoved forward and his upper body held vertically, he finds in glancing down over his knees that his toes are just hidden by his knees. These tests are simple and positive.

The toes should not be permitted to turn out excessively, else the pressure with the inside of the thigh and knee will be lost; neither should the toes be turned in excessively, else the light contact with the calves will be lost. The feet should be kept into the horse's side and not shoved out.

In order to have a good seat the whole body, especially the ankle joints, must be supple.

The tendency of most beginners is to support themselves and maintain their balance by a firm hold of the reins, thus ruining the horse's mouth and spoiling his temper through constant worry and torment. This tendency must be combated from the very start, since holding on by the reins is a fault which if once learned is most difficult to eradicate. Correct balance, moreover, is much harder to learn if a convulsive grasp of the reins serves to prevent the man's body from accommodating itself without rigidity to the movements of his mount.

A balanced seat, independent of the reins, can only be certainly and surely learned by much riding without reins and stir-

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rups. A safe principle, that with profit can be applied to most men, is that they should not be intrusted with reins until it is perfectly immaterial to them whether they have reins or not. When this is the case they can take the reins and very soon be able to hold them so that the light elastic feel of the horse's mouth is constantly maintained, and this, as it should be, quite independent of their own bodily movements.

284. Favorable exercises to be used in establishing a correct and firm seat independent of the reins are:

1. Riding without reins and stirrups.
2. Suppling exercises.
3. Jumping.

Riding Without Reins and Stirrups.

285. Riding without reins should be begun with the very first mounted lesson, and thereafter throughout the entire period of elementary instruction a portion of each lesson should be devoted to it.

The instructor causes the riders to take the track behind a leader, and to drop their reins as soon as their horses are going quietly and smoothly. For the first few lessons the gait is confined to the walk, then as confidence is established it is pushed to the trot and later to the gallop. At each gait stirrups should be retained until the riders have lost all sign of nervousness, when they should be abandoned and the work continued without reins or stirrups.

When riding without reins the instructor causes the men to fold their arms in front of their bodies, or place their hands on the hips, overhead, to the side, to the front, etc., or hold them as though they were holding the reins, and at the same time he sees that they do not derange their seats. The movement

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of the arms in this manner assists in bringing about relaxation and in acquiring balance.

When riding without reins for the first few times, it may be found advantageous with some men to have their horses led by an instructed soldier, who, in this case, may be either mounted or dismounted. Another method is to put the horse on the longe for the first few lessons without reins.

Suppling Exercises.

286. These exercises afford one of the very best means at the disposal of the instructor for establishing a firm seat independent of the reins. They are conducted as prescribed in paragraphs 264 to 278.

Jumping.

287. Jumping is an equestrian art that, in its finished form, the Field Artillery soldier does not need sufficiently to justify spending the time necessary to acquire it. But it is so valuable a means of teaching firmness of seat, balance, and suppleness of body that it can, with the greatest profit, be taken up and pursued in an elementary way during the instruction of the Field Artillery soldier in riding. On frequent occasions it should be combined with simple suppling exercises.

The horses used in this instruction are preferably the riding horses of the battery, although team horses may be used even to their advantage rather than detriment provided the obstacles are always those of height and never those of breadth, such as ditches, small streams, etc., that the horse might encounter and be tempted to jump while in draft. Galloping and jumping only serve to exercise and strengthen the large muscles of the

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back, loins, and quarters, needed and used most in the work of draft. The riding horses, especially those used by the battery commander's detail, should be trained to negotiate all reasonable obstacles, and they are therefore very suitable for this work.

Jumping should be begun as soon as the men have reached the stage of galloping without reins or stirrups. At first the obstacle is very low, beginning with a bar laid on the ground. It is then raised slightly from time to time until it reaches 2 feet. This height should not be exceeded.

From the very first jumping should be without reins. Stirrups should be used until confidence is established, when they also should be discarded.

In some cases it may be found advisable to have the first jumping done with the horse on the longe, but care should be taken in this case always to give the animal plenty of rope on landing to avoid bringing him around on a sharp circle, thereby increasing the difficulties of the rider. In any event the beginner should be permitted to hold the pommel of the saddle or a lock of the mane until he has become accustomed to the motion of the horse and has acquired confidence. Thereafter the arms should be folded across the chest or held as if the reins were in the hands or should be engaged in executing some of the simple suppling exercises. It may also be found advantageous to join the stirrups by a strap under the belly for the first few lessons, as this prevents the beginner's legs from flopping away from the horse's sides.

The jump is made as follows: On approaching the obstacle tighten with knees and thighs, the body leaning slightly to the front; at the moment the horse rises bend the upper part of the body forward at the waist, the buttocks remaining in the saddle;

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as the horse alights sit well down in the saddle, but without pushing the legs to the front.

During the entire period of the jump the upper part of the rider's body should remain inclined at about the same degree to the front of the vertical. This slight leaning to the front depends upon the speed, and is just sufficient to keep the rider going steadily and firmly with his horse.

In the take-off, therefore, the neck of the horse approaches the rider's chest, and in the landing his croup approaches the rider's back, while in the summit of the leap the body of the rider and the back of the horse bear the same relative position to each other that they did before the jump was made. The bend which the rider makes to the front at the waist as the horse takes off is just sufficient to take up the sudden and powerful thrust which the horse makes with his hind feet as he leaves the ground. The rider shows poor horsemanship, either at the take-off or during the jump, if he "hangs on" behind the motion of the horse. The rider always endeavors to keep in unison with his horse whatever changes in rhythm or pose the latter may make. In approaching and making the jump it is essential that the rider's loins be supple and the small of his back convex.

In general, the horse should jump at the gait at which he approaches the obstacle; if he hesitates, the rider should stimulate him vigorously with the legs. It will be found, however, that almost no refusing occurs when both horses and men have been trained to jump without reins.

A dismounted man with a can of oats should be posted a short distance beyond the jump, as in the corner of the school, and each horse on finishing the jump should be conducted to this point where he is rewarded with a handful of the grain. If

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this practice is followed, it will be found that the horses take jumps willingly, calmly, without undue fatigue, and will not rush after the jump has been passed.

After a certain amount of practice over one jump a second should be placed at a distance of about 5 yards from it, and the men required to negotiate the two. Later on others may be added until four or five are taken in succession. This practice, which is frequently combined with simple suppling exercises, is most excellent in establishing a correct and firm seat independent of the reins and in obtaining suppleness.

When the men have become expert in negotiating these jumps without reins or stirrups they are gradually trained to handle the reins when jumping, the object being to teach the rider to keep off the mouth of his mount, no matter what the reactions of the latter may be.

The horse must have the free use of his head and forehand during and after the jump, hence the instructor must exercise the greatest care to see that the men use hands and reins in such a manner that the horse's mouth is not ill treated. The loins and hips should go with the movements of the horse, and the shoulder joints should be given free play when the horse requires more rein; all jerky movements of the arms and wrists will then be avoided as the hands go forward. Reins must be held long, and the man taught to keep his hands low and allow them to come freely forward as the horse is on the downward plane. In some cases it will be found necessary to require the rider to let the reins slip through his fingers in order to allow the horse to jump unhampered.

In order to derive the greatest profit from jumping lessons the riders are required to change horses with great frequency.

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SECTION VI.—ELEMENTARY TRAINING IN EQUITATION AND HORSEMANSHIP, SECOND PERIOD.

1. Teaching the Aids and Their Correct Application in Controlling the Horse.

288. The means at the disposal of the rider for controlling the movements and gaits of his horse are his **legs, reins, and weight.** These are termed **the aids.** On suitable occasions the aids are assisted or emphasized by a proper use of the **spurs, the whip,** and the **voice.** According to their very nature, the legs are the driving while the reins are the restraining aids. Both are effectively assisted by the weight of the rider. Of the two aids, the driving and restraining, the former are overwhelmingly predominating. As the training of a horse or rider progresses, the aids must become more refined and less noticeable until the horse, without perceptible effort on the part of the rider, seems to obey the latter's thoughts alone.

Leg Aids.

289. The legs should be free from all involuntary movement and very steady in their action. A swinging leg confuses the horse. The legs act by the pressure of the calves with heels well shoved down. They are applied gradually, according to the sensibility of the horse, so that the latter will not be surprised and give a sudden start. If pressure alone is insufficient the rider increases the action by taps with the calves, increasing in severity until obedience is obtained, when the action should cease.

The position of the lower leg determines the nature of its effect. Thus, if both legs are applied near the rear edge of the

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girth the effect should be to drive the horse forward or to increase his gait, while if one leg is drawn and applied a little further to the rear its effect, according to the intensity of its action, should be either to induce or to oppose a lateral displacement of the haunches. When the leg is thus drawn to the rear its position and action are referred to as either **sideward driving** or **supporting.**

Rein Aids.

290. The reins serve to prepare the horse to move, to permit an extension of his gait, to reduce his gait, or to change direction. For effects to be exact the reins must maintain **contact,** that is, a soft elastic bearing of the bit on the bars of the mouth. A man who rides with this soft elastic bearing—that is, with contact—is said to have a **light hand.** It is obtained by maintaining a smooth and steady seat, by keeping the muscles of the shoulders and arms relaxed, and by keeping those of the fingers and wrists soft and springlike in their action. The hands should be perfectly steady, to insure which there should be no motion of the shoulders or elbows.

A few men in seeking light hands ride with loose reins. This **is no hand,** and should be avoided because the rider, having lost communication with the horse's mouth, does not have his mount under instant or prompt control. With the reins loose and flapping the indications of the hand will not reach the horse, or if they do they will arrive confused or in the form of brutal and awkward jerks.

A **heavy hand** is one which maintains such strong and constant pressure on the horse's mouth as soon to deaden it and destroy its sensibility. A heavy hand soon gives a horse a **hard mouth.**

In producing these various effects the reins act by a tension or a yielding. With a well-trained horse a sufficient increase

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of tension can usually be produced by a mere closing of the fingers and by an inward bending of the wrist. In doing this the middle joints of the fingers approach the body and the little finger moves upward. When a stronger effect is necessary the arm must take part in the movement. The increased action of the reins must cease as soon as the horse obeys the indication.

The rein is yielded when the little finger approaches the horse's mouth while the hand maintains contact. It is yielded in all those cases where it is desired to give the horse the freedom necessary to permit him to move out or to increase his gait. If it is intended to let the horse have sufficient freedom to extend his neck, the whole arm should take part in the movement or the reins should be permitted to slide through the fingers.

The full effect of the rein aids can be produced only when the two reins act reciprocally. A horse will obey the rein on one side by merely bending and turning the head and neck around to that side. This, then, becomes the **inner or direct rein.** In order to execute a turn properly, as well as to limit the bend of the head and neck, the counter action of the other rein is necessary; it then is termed the **outer or supporting rein.** Its action is usually a slight restraint of the hand, but may, under circumstances, increase to an active resistance or reining in. Either rein may be opened out away from the neck or closed in and bearing against it.

To execute a turn when riding with the reins in two hands, the inner hand is turned upward toward the body of the rider, the little finger rising toward the inner breast; this shortening of the inner rein will cause the horse to bend and go into the turn. The execution is faulty if the rider pulls the head and neck around until they are off the curve of the turn. This is a fault most easily acquired and most difficult to correct. The

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outer hand yields just sufficiently to permit the horse to obey the shortening of the inner rein, and determines and regulates the radius of the turn by the outer supporting rein bearing against the neck of the horse. Each hand should remain on its proper side; carrying the hands laterally across the withers is faulty. This combined use of the **inner** or **direct** rein and the **outer** or **supporting** rein is the most favorable for teaching the **Field Artillery** horse, intended and used for draft, to step freely into the turn for which his head has been set and his neck bent. The direct rein alone finds constant application with the **Field Artillery** driver in the control of his offhorse, as, for instance, a feeling of this horse's right rein to cause him to bend and step into a turn to the right.

With the reins in one hand the turn is similarly executed, except that the outer rein predominates in its bearing action against the neck. Here the inner rein is shortened by turning the little finger toward or away from the body or by adjusting the reins before the turn was executed. The action of the hand is faulty if it crosses the withers.

All action of the reins should diminish in intensity when obedience begins, and cease entirely as soon as the desired result is secured.

For equitation work riders can not be too strong in their legs, and very few of them are sufficiently soft and elastic in the use of their hands. Most of the trouble the rider has in handling his horse can be traced directly to too little use of the legs and too much use of the hands.

During elementary instruction in equitation the reins should be habitually carried in both hands, as this obtains quicker results in the matter of hands and in the manageability of the horses. However, to prepare the rider for his work in driving, riding with the reins in one hand must not be neglected.

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The Weight.

291. The weight of the rider when properly used in connection with the reins and the legs is a very important aid, which, moreover, is entirely independent of the sensibility of the horse's mouth and sides. Its use enables the horse to understand more intelligently and more easily to obey the leg and rein aids.

The use of the rider's weight as an aid will work to the best advantage if the horse's and the rider's centers of gravity were previously in the same vertical line. The knack of going with the horse lies in the ability of the rider to harmonize his center of gravity with that of his horse. The rider who is properly going with his horse should feel as if he and his horse were one in all movements. It is also the easiest way for a horse to carry a rider's weight. On the other hand, a rider who does not possess this knack of going with his horse, by a faulty placing of his weight, will disturb both the gait and the carriage of his horse.

With a correctly gaited horse, the centers of gravity of horse and rider will both fall in the same vertical line if the latter maintains a correct seat and carries his upper body erect. Every deviation from this direction denotes a weight aid.

The rider must then be warned not to hinder the movements of the horse by a bad division of his weight, but, on the contrary to favor them by acting always in the direction sought.

In moving, stopping, turning, and on two tracks, the rider, by carrying his weight on the buttocks or thighs in the direction of movement may facilitate and hasten the obedience of the horse. These displacements of the weight are quite emphasized in the early handling of the young horse. But they become more and more discreet as his training is perfected.

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Use of the Spurs.

292. The spurs are used with horses that are sluggish in obeying the leg aids, as a summons to greater efforts or as a means of punishment.

If used to assist the leg aid the spur should be applied more or less delicately, according to the sensibility of the horse, but not until the leg aid has already been applied. The position of the lower leg must not be disturbed thereby. The rider should avoid digging into the horse's sides. To urge a horse to make greater use of his strength, or as a means of punishment, one or more raps with the spurs are administered in the same place, the point of application being immediately in rear of the girth.

If, on very rare occasions, it becomes necessary to administer punishment, the rider before doing so must make sure in his mind that there is actual disobedience, that his demands have not been too great; and that he has not given confusing, contradicting, or incorrect indications. Punishment should never be administered in the heat of anger. Such a state of mind disturbs the understanding between rider and horse and undermines the confidence which the horse should have in his rider.

An independent seat and equestrian tact are absolutely necessary in using the spurs to reinforce the leg aids.

The recruit should not be permitted to ride with spurs until he has acquired a proper seat and balance, and until he has learned to apply the aids correctly.

The Whip.

293. The whip is used principally in training the remount, to teach him to understand the action of the legs. It is also of important assistance to the Field Artillery driver.

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It is not used in elementary instruction of recruits, since the tendency would be to depend on its use rather than to learn the proper application of the legs.

The Voice.

294. The voice, like the weight, is entirely independent of the sensibility of the horse's mouth and sides. It is particularly valuable in training the remount to understand and obey the rein and leg aids. It is not needed by the expert horseman on a properly trained horse, nor should it be used in the instruction of recruits, since the tendency would be for the rider to resort almost wholly to it, and thus neglect his rein and leg aids. For the Field Artillery driver it is of important and powerful assistance.

The Use and Accord of the Aids.

295. The beginner must not only learn how and when to apply a given aid, but he must also be made to understand why it should be applied.

To obtain successful results it is essential that the aids be applied at the right moment, also that they be applied correctly, as follows: First, their application must be intermittent, that is, when an aid is employed to effect a movement the action must be relaxed as a reward for obedience the moment the horse yields in the slightest. The aid should be reapplied and released and reapplied and released until the horse has yielded and completed the movement desired. In other words, when the desired effect has been gained the application of the particular aid which has been used must cease lest the horse becomes insensible to its action. The continual pressure of the legs, for example, would soon make the animal so insensible to leg pressure that he would notice it no more than he does the pressure of the girth.

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Second, the aids must be used in the proper relationship, that is, they must mutually assist, not oppose, each other in their action. This is a very common fault, as, for example, demanding one thing with the legs and contradicting it with the hands, or applying one leg to swing the haunches and unconsciously contradicting the desired movement with the other leg. To combat this fault is one of the objects of the suppling exercises.

Third, the aids should be used gently, commencing with the mildest, and gradually increasing to a more pronounced form of severity. An aid applied so suddenly or so severely as to make the horse give a sudden jerk, jump, or start is an aid very faultily applied. Such an application of the aids tends to spoil the responsiveness of the horse and ruin his confidence in the rider.

A horse can be properly controlled only by the accord of the different leg, rein, and weight aids. Success depends not upon the strength used but in the tactful employment of the aids. The ability to recognize at any moment what aids are necessary and to combine them correctly to produce the desired effect constitutes equestrian tact.

2. Application of the Aids.

USEFUL TERMS EMPLOYED.

296. Interval: The open space between two adjacent riders, measured from stirrup to stirrup.

Distance: The open space measured from the tail of the horse in front to the head of the following horse. Distances are measured in **horse lengths** and in **yards.**

Boot to boot: Riders are said to be boot to boot when the stirrups of adjacent riders touch.

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Inner side: The inner side, in case of a horse placed straight, is the side toward the interior of the school; in case of a horse that is bent or set it is the side toward which he is bent or set. The other side is the **outer side.**

Inner aids: These are the rein and leg aids on the inner side of the horse. The other rein and leg aids are the **outer aids.**

Tempo or cadence: This denotes the speed with which a horse covers a certain distance at a certain gait. A proper conception of tempo implies also the presumption that the steps or strides constantly follow each other in the same uniform interval of time and are always of uniform length. The tempo is lively or slow, depending upon whether a great or small distance is covered in a particular unit of time.

Accurate tempo is the foundation of steadiness in all movement. Therefore every rider from the very beginning of his riding instruction must learn to acquire this instinct for cadence and be able to induce or produce it at all gaits and to sustain it uniformly throughout any gait.

To the right (left) hand: A rider marches to the right or left hand accordingly as his right or left hand is toward the interior of the school.

Gathering the Horse.

297. Before the horse is required to execute any movement he should be given a preparatory signal. Whatever the movement to be executed, the signal is always the same. Its object is to attract his attention and to prepare him for a movement. This is called **gathering the horse.**

Having a light pressure of the bit against the horse's mouth and a light feel of the lower legs against his sides, the rider, in order to gather him, increases the pressure of the lower legs, with heels well shoved down, and slightly increases the tension

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of the reins. These pressures are increased intermittently until the elastic movement of the horse under the rider indicates that the former has observed the signal.

If, when at a halt, the horse backs, or when marching decreases the gait, the tension applied to the reins has been too great. If, when at a halt, the horse moves forward, or when marching he increases the pace or gait, the impulse given with the legs has not been met or controlled by the reins.

Each force should exactly balance the other, and the horse, held between the two, should feel responsive to the indications and aids of the rider.

To Move Forward.

298. Being at a halt: 1. **Forward**; 2. **MARCH.** At the first command the rider gathers the horse; at the second he simultaneously (1) pushes his buttocks to the front, (2) acts with both legs according to the temperament of the horse, (3) eases the reins by slightly relaxing the fingers and giving the wrist, without losing contact. The aids cease to be active as soon as obedience is obtained.

To Halt.

299. Being at the walk: **HALT.** The rider sits well down in the saddle and gathers the horse; he then simultaneously (1) closes the fingers on the reins, bending the wrist, and, if necessary, moving the hands in and back with the body; (2) slightly increases the pressure of the legs; (3) imposes the weight of his body against the horse's back by convexing his loins backward.

As soon as the horse slackens the gait ever so little the pressure of the fingers and legs is slightly relaxed to reward him

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for his obedience. It is then reapplied and again relaxed until the horse has completed the movement desired.

In order to prevent the horse from halting entirely on the forelegs, the rider must increase the pressure of his legs to induce the horse to engage his hind legs farther under the mass. By convexing his loins and imposing his weight against the muscular activity of the horse's back, the rider limits the functionizing of the muscles which control impulsion and thus permits the hind legs to participate in stopping or in reducing the gait. It is faulty to lean back in an exaggerated position, because of the tendency to permit the legs and thighs to go forward and to act with a dead pull of the reins on the horse's mouth; if done abruptly, it is painful to a horse and may cause him to halt in a hard and jolty manner.

In reducing the gait a steady pull against the mouth must be particularly avoided.

The Half Halt.

300. The half halt finds constant application in the training of both horse and rider. It is a brief, energetic action of the hands, which the rider executes with the fingers closed on the reins by twisting the wrist quickly from below upward and from front to rear, without losing contact and without stopping the horse. At the same time the rider momentarily closes his legs and convexes his loins as in the halt. The half halt is used to slow up horses that are too ambitious or to carry to the rear the excess of weight that some badly balanced horses allow to come on the shoulders. It is effected according to need, on one rein, on two together, on the snaffle, or on the curb. The hand should regulate the power of its action by the resistance of weight which it meets.

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Changes of Gait.

301. To pass from the halt or the walk to the trot or the gallop, the means prescribed for passing from the halt to the walk are employed and continued until the desired gait is taken.

To pass from a faster to a slower gait, or to a halt, the means prescribed for passing from the walk to the halt are employed and continued until the desired gait is taken or the horse has stopped.

The commands are: 1. Trot, 2. **MARCH**; 1. Gallop, 2. **MARCH**; 1. Walk, **MARCH**; and **HALT**.

Extending or Reducing the Speed at the Various Gaits.

302. To extend or reduce the speed at any gait the rider employs the means prescribed for passing from the halt to the walk or from the walk to the halt to the extent necessary to obtain the desired results.

The horse in extending the walk increases the amplitude of the movement of his head and neck to the same degree as he increases the length of his step; he accelerates the movement of the head as he increases the cadence or tempo of his step.

The rider aids these movements by yielding the hand and giving the horse greater freedom of movement. He maintains contact so that he can exercise gradual restraining influence with the direct rein when he feels the horse is about to spring into the trot.

To reduce the walk the rider makes use of the direct rein and legs as in coming to the halt. The step is shortened and the cadence or tempo decreased.

To extend or reduce the trot, the same means are used. The exercises in extending and reducing the gait afford excellent

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practice for the rider in the use of the aids and good training for the horse in obeying them, but the soldier out of ranks should use only the regulation gaits.

Changes of speed are executed at the commands: 1. **Slow walk (trot or gallop)**, 2. **MARCH**; or, 1. **Walk (trot) out**, 2. **MARCH**; or, **Extended gallop**, 2. **MARCH**. The normal speed is taken at: 1. **Walk (trot or gallop)**, 2. **MARCH**.

To increase or decrease the cadence or tempo at any gait the instructor may caution: **Extend (Reduce) the gait.**

Changes of Direction.

303. At a walk the changes of direction are made on the arc of a circle the radius of which is 3 yards. This is the sharpest turn that a horse can execute as a one-track movement. Such a movement is one in which the haunches accurately follow the track of the forehand. At fast gaits, where the horse is more or less extended and therefore harder to bend, the radius of the turn must be correspondingly increased.

To March by the Flank.

304. Being at the halt or marching: 1. **By the right (left) flank**, 2. **MARCH**. The rider gathers the horse; the right rein, acting as the inner or direct rein, leads the horse into the turn and induces the proper bend; the right leg, applied at the girth, drives the right hind foot forward. The left rein, acting as a supporting rein, regulates the set of the head, limits the radius of the turn, and, together with the left leg, applied behind the girth, bends the horse on the curve over which he is turning and prevents the outer hind feet from falling out. After the forehand has been led in the new direction the action of the inner rein is diminished, and as soon as the horse has

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turned through an arc of 90° he is straightened and then directed and maintained on the new line.

It is important that the horse's body from poll to croup be bent to conform to the curve over which he is moving. (Pl. 42.) This will at times require a modification of the application of the aids as described above; that is, if the horse tends to carry his haunches to the inside of the curve the action of the inside leg should predominate, while if he tends to carry them to the outside of the curve the action of the outside leg should predominate.

During the movement the rider takes care to sit slightly more on the inner buttock, without advancing or drawing back his outside shoulder.

When the reins are carried in one hand the action of the supporting or bearing rein predominates.

305. If the commands be: 1. **Right (left) oblique, 2. MARCH; or Right (left) about, 2. MARCH,** the arc of the turn is 45° or 180°, respectively.

Circles.

306. Riding on a circle, when properly done, is an exercise that is especially valuable for both rider and horse. It teaches the rider properly to coordinate his rein, leg, and weight aids. By compelling the inside hind leg to flex itself more and to carry more weight than when riding on a straight line it supples, strengthens, and increases the handiness of the horse.

To ride a circle properly and exactly, the horse must be constantly changing direction. To do this he must be bent to conform to the curvature of the circumference. If the horse is properly bent on the circle, the imprint of each inner hind foot should follow that of the inner front foot, and the outer hind foot that of the outer front foot.

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Application of the aids.—Before going on the circle from any track the rider should gather the horse by giving a half halt and should then slightly displace his weight by sitting a little more on the inside buttock. The aids are applied as in the turns—that is, the inner leg applied at the girth drives the inside hind foot forward—the inner rein gives the proper bend and set and conducts the horse on the circle at the tangent point. The outer leg applied behind the girth prevents the haunches from falling out. The outer rein assists the outer leg and regulates the set.

It is of great advantage frequently to vary the size of the circle so as to vary the bend of the horse.

To Back and Halt.

307. Being at the halt: 1. **Backward.** 2. **MARCH.** 3. **HALT.** At the first command the rider shoves his loins forward, gathers his horse, and straightens him. At the second command he reins back straight in the direction of the hind feet, inducing the horse to go back quietly in a straight line, one step at a time. With each step to the rear the reins are relaxed as a reward for the animal's obedience. The legs take a supporting position close to the horse's sides in order to prevent the haunches from escaping to either side.

At the third command the action of the reins ceases while the legs change their action from supporting to that of driving in order to check and stop the movement.

Since every loading down of the haunches will make the raising and setting back of the hind feet more difficult, the rider, if he meets resistance, should be careful not to lean back too far, but should lean forward slightly and push his loins forward. Likewise, the rider must avoid raising the horse's head, since an elevated position of the head also constrains

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the muscles of the loins and so renders the backward movement more difficult for the horse. If the horse refuses to back, he should be made to take one or two steps forward or to one side on the forehand to flex the muscles of the hind quarters and advantage then taken of this flexed condition to cause him to back.

Backing is not correctly done until the horse steps back thoroughly responsive to the aids and against the bit.

To avoid getting the horses behind the bit the instructor should always cause the riders to move their horses forward a step or two immediately after halting. Backing should never be executed for more than about 5 yards at a time.

To Turn on the Forehand.

308. Being in line or column at the halt: 1. **On the forehand,** 2. **To the right (left),** or, 2. **To the right (left) about,** 3. **MARCH.** The horse is first put up against the bit, or gathered. The rider then takes a slight set of the head toward the side of the turn. The inner right leg is applied behind the girth and when necessary is accompanied by the action of the inner rein. The haunches are swung step by step around the opposing forehand until a turn of 90° or 180°, respectively, is completed. Every step of the haunches is regulated accurately by the outer supporting leg applied behind the girth in such a manner that there is a decided pause between steps, thereby preventing the haunches from rushing. Both during and after the movement the rider's legs and seat should insure that the horse does not back but remains up against the bit. A stepping forward usually indicates a falling out of the outer shoulder and must be counteracted by the outer rein. The inner rein should not act so strongly as to bend the neck, except in case of a green horse

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that does not understand the leg aids, or with a horse that offers resistance.

The turn on the forehand is not a real schooling lesson, because the haunches are disburdened and the horse thrown on the forehand. For this reason it should not be repeated very often.

As a rule, turns on the forehand are practiced only in the early training of the horse. Their principal purpose is to teach the rider the correct use of the sideward driving inner leg aid the inner rein, and the outer supporting leg and rein.

As the movement has a great tendency to make the horse reluctant in going up promptly against the bit, the turn should be always immediately followed by a movement to the front at a free walk or at a trot, and it should never be exacted of young horses until the straight-ahead movement has been well confirmed.

To Turn on the Haunches.

309. Being in line or column at the halt: **1. On haunches, 2. To the right (left), or, 2. To the right (left) about, 3. MARCH.** The rider puts his horse against the bit, gathers him, and sets the head to the side of the turn. The inner right rein begins and induces the turn, then carried well away from the neck, leads the forehand step by step around the haunches through a turn of 90° or 180°, respectively. The inner right hind foot must be kept in place during the turn. To accomplish this, the outer rein should be reined in in the direction toward this foot. The outer hind foot must be prevented from falling out by the supporting action of the outer leg. Both of the rider's legs, but especially the inner one, prevent the horse from stepping back during the turn. It is a lesser mistake if the horse steps for-

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ward. The rider should place a little more of his weight on the inner buttock. (Pl. 43.)

The instructor must see that the rider's legs and weight are placed as above described and that the tendency to let the legs fly away from the horse's sides be completely overcome.

To Turn on the Forehand in Reverse.

310. Marching on the track to either hand: 1. **Reverse,** 2. **MARCH.** At the command **march** the rider leaves the track by an oblique. Having advanced far enough in this direction to place him from 6 to 15 yards from the track, the instructor adds **NOW,** whereupon the rider moves his horse back to the track over the arc of a half circle whose diameter is the distance thereto and retakes the track in the opposite direction. (Pl. 43.)

Application of the aids.—At the moment the half circle is begun the aids are applied and the horse is bent as if to march on this circle. Immediately thereafter the inside leg is slipped in rear of the girth to the sideward driving position and is applied to drive the haunches outward so that they describe an outer and larger circle than the forehand. The outer leg takes a supporting position behind the girth to prevent the haunches from coming around too fast. The swing of the haunches should be slight as the half circle is begun and should then increase as the track is approached. The lateral drive should be strongest when the forehand has almost reached the track, and the haunches are about 1 yard from it.

With recruits and remounts the turn should be made on a large continuous curve. The horse is therefore changing direction while gaining ground to the front. The diameter of the half circle described by the forehand is never less than 6 yards.

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The principal object of this movement is to teach the horse to yield to the inside aids, especially the sideward driving leg. It is therefore of great value to teach the rider the coordination and use of these aids and to get control of the haunches of his horse. The movement finds practical application with Artillery lead horses in the last phase of limbering as the team is straightening in the new direction.

Short About on the Haunches.

311. Being on the track to either hand and in march: **1. On the haunches, 2. Countermarch, 3. MARCH.** At the last command the rider, with the outer rein, executes a half halt toward the inner hind leg. At the moment the forward movement is interrupted, the rider sets the horse toward the turn and leads the forehand around the haunches, applying the aids as in the turn on the haunches. The haunches, therefore, describes an inner and smaller circle than the forehand. When the horse has been turned through an arc of 180° the rider obliques back to and takes the track in the opposite direction. The outside lateral pair of feet should always step in front of the inside pair, and the diameter of the semicircle should depend upon the degree of training of man and horse. In the movement in its finished form the schooled horse turns about his inner hind foot and therefore, on completion of the term, is about his own breadth from the track.

This movement is executed only at the collected gaits, and is not taken up by recruits until they show proficiency in coordinating their aids.

For the Field Artillery horse this movement finds constant practical application in limbering and turning.

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Special Exercises on Two Tracks.

312. One-track movements are those in which the hind feet track with the forefeet. Two-track movements are those in which the horse is compelled to take an oblique position to the direction of march, and his forefeet and hind feet travel on two parallel tracks. All two-track movements are but a means to an end, which is to increase the obedience, strength, suppleness, and hardiness of the horse. When practiced as a specialty or too intensively, they do positive harm in that they reduce the natural tendency to go forward so desirable and necessary in the Artillery draft horse. The movements prescribed below are of importance to the Field Artillery horse because of their constant application in turning and limbering. On this account they should be readily and easily performed by these horses, and the aids for them thoroughly understood and correctly applied by the riders.

As an Artillery horse intended and used for draft should promptly and freely step into the turn for which his head has been set and his neck bent, two-track movements, such as shoulder in or shoulder out, in which the head and neck are set away from the direction of motion, are of doubtful utility.

All two-track movements are very fatiguing and should not be prolonged beyond a few steps. They should be executed at gaits not faster than the slow trot; preferably, for Artillery horses, at the walk. When taken up, the men should have acquired good seats and should have learned independence in the use of the aids.

Haunches Right or Left.

313. Marching to the right hand with three lengths distance between riders: 1. By file, 2. **HAUNCHES RIGHT (LEFT).**

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The command is given as the leading rider approaches the second corner of a short side of the school. (Pl. 42.) Each rider, as he comes onto the long side, executes the movement for a few steps, discontinuing it at the command **STRAIGHT** by the instructor.

Application of the aids.—As the forehand reaches the track on the long side the rider gives a half halt and gets the horse well up between his legs and reins. To begin the movement it may be necessary to set the horse's head slightly to the left by the direct action of the left rein. The left leg takes the sideward driving position and is applied with an alternating pressure in unison with the lifting of the left hind leg. It forces and keeps the haunches the desired distance from the track. This leg is also responsible for driving the horse forward. The right leg, applied at the girth, limits the displacement of the haunches. It prevents the horse from running from the opposite leg, from losing the cadence, and his forehand from leaving the track. It also assists in maintaining the collection and in holding the horse up against the bit. The reins maintain the direction and keep the neck straight. The right rein leads and is opened only so much as is necessary to give the direction; the left rein held low is closed and prevents the neck from bending. The weight is shifted slightly in the direction of motion.

At the command **straight**, the horse is pushed to the track on a flat curve and then driven straight ahead.

The movement is properly executed when the horse is straight from poll to croup, but is set at an oblique to the direction in which he is moving. The front and hind feet travel on two parallel tracks, the left fore and left hind stepping in front and across the right fore and right hind. The displacement of the haunches is very slight at first, and at no stage should reach more than 45°. (Pl. 42.)

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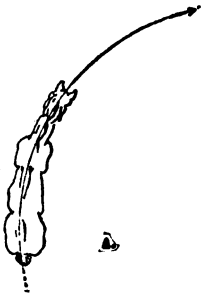
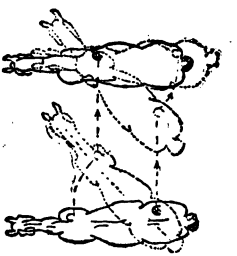


A.

B.



D.

C.

A. HORSE PROPERLY BENT ON TURN.
B. HAUNCHES RIGHT, STRAIGHT FROM POLL TO CROUP.
C. HAUNCHES LEFT, STRAIGHT FROM POLL TO CROUP.
D. SIDE STEP TO THE RIGHT.

PLATE 42.

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Haunches left may be executed when marching to the same hand. In this case the rider passes through the second corner and turns onto the diagonal of half the school. The movement is begun and similarly executed just as the haunches are about to leave the track. The haunches travel along the track while the forehand moves on a line parallel to and inside of it. (Pl. 42.) When the displacement exceeds 45°, the forward tendency is destroyed and the movements become cramped, while the excessive crossing of the feet may be the direct cause of leg injuries that will develop harmful resistance.

Haunches In or Out.

314. Marching to the right hand with three lengths distance between riders: 1. **By file**, 2. **HAUNCHES IN (OUT).**

The command is given as the leading rider approaches the second corner of a short side of the school. Each rider individually, as he comes onto the long side, executes the movement for a few steps, discontinuing it at the command **STRAIGHT** by the instructor.

Application of the aids.—On passing through the corner the rider executes a half halt as the forehand reaches the track of the long side, and then begins the movement. The horse is uniformly bent from poll to croup around the right leg applied at the girth. The forehand strides straight to the front on the track, while the haunches are displaced to the inside, the left hind stepping across and in front of the right hind. (Pl. 44.) The right rein is shortened and maintains the necessary set of the head and leads the horse in the direction of march. The right leg in combination with the right rein produces and maintains the proper bend. The left rein regulates the bend, fixes the neck at the shoulders, keeps the left shoulder from falling

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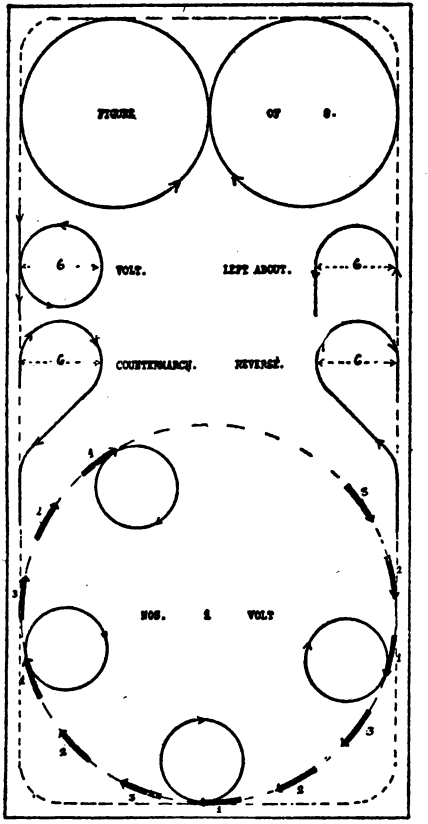

PLATE 43.

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out, and supports the action of the outer leg. The left leg applied behind the girth displaces the haunches to the desired degree and maintains the forward drive. The weight is slightly displaced in the direction of motion.

At the command **straight** the horse is brought back onto the track by closing both legs, the inner predominating, and driving the horse forward in the direction of the forehand as on the circle.

Haunches out, when ridden on a straight line, is exactly the same as **haunches in.** It is developed by first leading the forehand off the track to the inside, and then displacing the haunches outward. (Pl. 44.)

In haunches in or out, the bend throughout the body depends upon the training of horse and man. For the work herein prescribed it should be slight, it being sufficient if the outside hind-foot tracks with the inside fore.

Side Stepping.

315. In this movement the horse steps sideward on the line of the original front. It is used in closing in when in line, and the movement as herein described is very similar to that required of Artillery team horses in limbering. Being in line with intervals of one horse length: 1. **Side step to the right (left),** 2. **MARCH,** 3. **HALT.**

Application of the aids.—The rider gathers his horse, sets him, and applies the aids to turn him on his haunches to the right through an angle of 45°. He then applies the aids as in **haunches right** and moves the horse on two tracks parallel to the original front until the instructor commands **halt.** At this command the horse is halted and the aids applied to turn him 45° to the left on the forehand. The horse will then be about one pace

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behind the line, and is therefore straightened, moved forward up to, and halted on it. (Pl. 42.)

3. The Riding School.

GENERAL PROVISIONS.

316. The riding school is a convenient and favorable place for teaching the rider the proper application of the aids. It is also looked upon as a gymnasium for training and schooling horses, for promoting their physical development, improving their balance and gaits, and confirming their obedience to the aids. However, whether the object be the training of rider or horse, there must be a judicious interchange of work in the school, in the outside rectangle of large dimensions, and work on the road and over varied terrain.

In order to teach the application of the aids or to confirm obedience thereto, it is absolutely necessary for the rider to prescribe accurately the path on which his horse is to move. If this is not done the rider becomes careless and inattentive, while his horse soon acquires bad habits, shows lack of obedience and slouchiness of gaits and manner, and the great benefits to be derived from work in the school are lost. The most valuable means of counteracting this tendency is to place distinctive marks on the walls of the school, these serving as points of direction upon which the rider can guide his horse and so execute the movements or figures with almost geometric accuracy. These marks should be at a sufficient height to enable every man in the section, even when covering in column, to see them.

The sides of the riding school are called the long and short. A good proportion is two to one. A favorable size is 32 by 64

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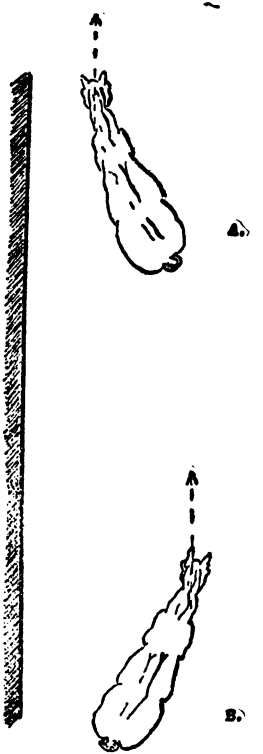

A. HAUNCHES-IN, UNIFORM BEND FROM POLL TO CROUP.

B. HAUNCHES-OUT, UNIFORM BEND FROM POLL TO CROUP.

PLATE 44.

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yards. This is sufficiently and conveniently large for a section of 20 men, and in case of necessity can be used for one of 30 men. The points at which to place the distinctive marks in a school of these dimensions are shown in plate 45.

In a riding school, unless otherwise indicated, the men ride at a distance of one horse length, and in passing the rule is to give way to the right except as specified in paragraph 327.

Exercises.

317. The following exercises, though especially good, are not the only ones that may be employed. The instructor may supplement them by others, always bearing in mind that the exercise employed should be for some definite object and should be looked upon merely as a means to an end. It is of advantage to make use of a great many different exercises, as by so doing interest is increased.

To make an explanation or to give instruction to all the men at the same time, the instructor by appropriate signal or command gathers his pupils about him, dismounting them if desirable.

318. TAKE THE TRACK, or **TAKE THE TRACK TO THE RIGHT (LEFT) HAND IN REAR OF** (such soldier): The track is that part of the school extending 1 yard within the sides of the walls, the corners being rounded off on an arc whose radius is 3 yards. (Pl. 45.) At the extended gaits the radius is increased to 7 yards for the trot and 11 yards for the gallop.

319. TAKE THE INSIDE TRACK: This track is indicated by the marks placed 4 yards from each corner. (Pl. 45.) The command is given as the leading rider approaches a corner at which place the change is made on a turn. To ride any other inside track the instructor adds (so many) yards from the wall.

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320. To pass from the track to the track of half the school: **TAKE THE HALF TRACK.** The command is given as the leading rider approaches the open side of the half track, and the section then rides on a quadrilateral in half the school. (Pl. 45.)

To resume the track: **TAKE THE TRACK.** The leading rider on again reaching the track remains on it without change of cadence or gait.

321. CHANGE HANDS: The command is given as the leading rider approaches the second corner of a short side; having turned through this corner, he leaves the track at the 12-yard mark, crosses to and takes the track at the diagonally-opposite 12-yard mark. (Pl. 45.) If the men are in two squads, the leading riders pass each other by going to the right.

322. THROUGH HALF THE SCHOOL, CHANGE HANDS: The command is given before the leading rider reaches the second corner of a short side or before he reaches the middle of a long side. The change is made from the 12-yard point beyond the second corner of a short side to the middle of the opposite side or the reverse. (Pl. 45.)

323. DOWN THE CENTER, CHANGE HANDS: The command is given as the leading rider approaches the first corner of a short side. (Pl. 45.)

324. ACROSS THE CENTER, CHANGE HANDS: The command is executed when the leading rider next reaches the middle point of a long side. (Pl. 45.)

325. AT WILL, CHANGE HANDS: Each rider changes hands at will by any one of the methods described, or by a countermarch.

326. ON THE CIRCLE: The section follows the leading rider onto the circle from the next **point of the circle.** The **points of the circle** are those points at which the large circle in the end

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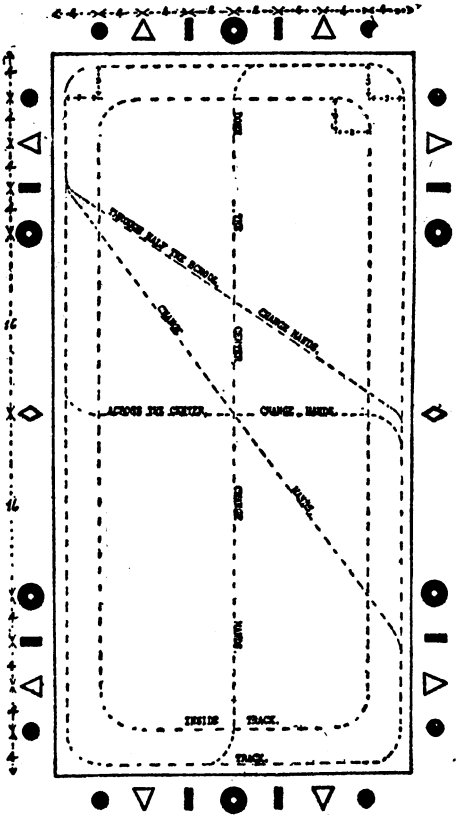

PLATE 45.

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of the school is tangent to the end quadrilateral, or, in the school described, to the half track. (Pl. 45.) To put the section on two circles, the instructor designates a leading rider for the second circle and commands: **ON TWO CIRCLES.** This command is given after the leading rider has passed the center of a long side, and each leading rider then takes the circle at the next point of the circle.

To put the section again on the track: **TAKE THE TRACK.** The leading rider of the first circle changes to the track at the next point of the circle thereon. The leading rider of the second circle conducts his circle by the shortest route, without change of cadence or gait, and joins onto the first circle at the proper distance.

To inscribe a circle the rider should have in mind a quadrilateral having its four corners at the four points of the circle. If the rider will then round out each one of these sides when riding from point to point he will use his aids to better advantage and inscribe the circle more accurately than if he purposely tried to ride a circle.

327. CHANGE CIRCLES: The leading rider, just before reaching the point in the open school, passes diagonally across to the circle in the outer end of the school; thus a change of circles is also a change of hands. (Pl. 46.) If the section is riding on two circles, the leaders give way to the left when changing from the left to the right hand and to the right when changing from the right to the left hand.

328. IN THE SAME CIRCLE, CHANGE HANDS: The leading rider turns toward the center of the circle from the point just before the open side. The change of set is accomplished at the center of the circle. (Pl. 46.)

329. Being on the circle, to diminish or enlarge the circle: **DIMINISH THE CIRCLE,** or, **TO (SO MANY) YARDS DIS-**

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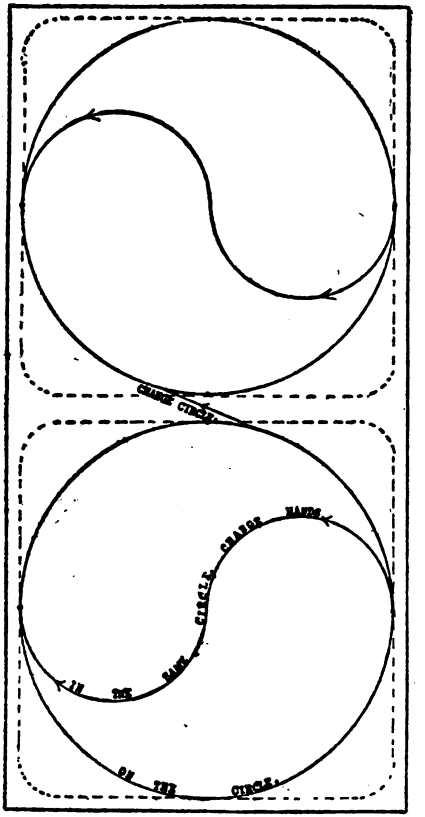

PLATE 46.

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TANCE, DIMINISH THE CIRCLE: Each rider, keeping his horse at the same cadence, individually diminishes the circle by riding a spiral toward the center of the circle until a distance of 1 yard or the prescribed distance has been obtained.

ENLARGE THE CIRCLE: Each rider individually enlarges the size of the circle by approaching the original arc of the circle on a spiral track, being careful to maintain the forward movement.

Each rider must enlarge or diminish the size of the circle individually and not follow the track of the leading or preceding rider. Each rider will therefore describe an individual spiral track toward the center of the circle or back to the circumference of the original circle, as the case may be.

330. Being on the track. **ALTERNATE TRACK AND CIRCLE**: The command is given when the leading rider approaches the second corner of a short side. At the next point of the circle the rider takes the track or the circle as he may elect. The following riders on reaching this point take either circle or track according to whether the preceding rider has taken track or circle. Those who take the circle make one complete round and repeat the exercise. The movement is continued until the command **TAKE THE TRACK.**

331. Being on the track. 1. **VOLT,** 2. **MARCH.** Each rider individually describes one complete circle tangent to the track, with a radius of 3 yards, and retakes the track at the point where he quitted it. (Pl. 43.)

As the individual circle in a one-track movement, which represents the highest degree of curvature which is possible to require of the ordinary schooled horse without damage to gait or cadence, the instructor indicates a suitable larger radius when working with recruits or green horses, or when working at extended gaits. The marks on the walls of the school serve

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as guides to the men in describing their circles with the proper diameter.

Having counted three from front to rear, if the command be 1. **Nos. 1 (2 or 3)**; 2. **VOLT**, 3. **MARCH**, each No. 1 makes the volt and rejoins the column by taking the place vacated by the next No. 1 in his rear.

332. Being on the track to either hand, 1. **Countermarch**, 2. **MARCH.** At the command **march**, each rider leaves the track on the arc of a half circle, whose radius is 3 yards. From the outer point of the semicircle he executes an oblique back to the track. (Pl. 43.)

The same precautions as to cadence and execution mentioned for the volt apply also to the countermarch.

If it is desired to execute the countermarch successfully from the head of the column, the instructor commands: 1. **By file**, 2. **From the corner**, 3. **COUNTERMARCH.** The leading rider on reaching the corner at the end of a long side turns through it, continues his turn to the half-circle point, and from there obliques back to and takes the inside track in the opposite direction.

333. Being on the track to either hand, **BROKEN LINE (SO MANY) TIMES**: The command is given when the leading rider approaches the first corner of a short side, and the movement is begun after riding through the next corner or turn. In riding a broken line, the rider changes direction obliquely into the center of the school, and then back again to the track. While riding the length of the school he repeats this the number of times ordered in the command. (Pl. 47.) The number of breaks ordered depends upon the length of the school and the stage of training of rider or horse. The length of each oblique depends upon the number of breaks ordered.

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334. Being on the track to either hand, **SERPENTINE (SO MANY) TIMES**: The command is given as the leading rider approaches the first corner of a short side, and the movement is begun after riding through the next corner. It consists of a series of incomplete circles or loops. (Pl. 47.) It is of value in quieting horses and in teaching men the frequent change of aids to change direction. Each rider must be careful not to cut the curve but to ride it out fully.

335. ON THE FIGURE 8: The figure may be executed anywhere and may be of any size. It is always larger for untrained horses or riders. It is most accurately and easily made along a short side. It is begun after passing through the second corner of a short side, the first circle being described to the same hand as the rider's original direction. The second circle is described to the opposite hand.

The two loops should be perfect circles tangent at the common point opposite the center of the short side. (Pl. 48.) This is the point at which the change of set or bend is made. Figure 8's are made during individual riding and at collected gaits only. The frequent change of bend in this movement makes it a capital lesson for both rider and horse.

Work by Threes.

336. Most of the riding-school exercises above prescribed can be executed in groups of three, either individually or collectively. For example, being in column and counted off by threes from front to rear: 1. **Threes, right about,** 2. **MARCH.** Each No. 1 in the column, followed by his No. 2 and No. 3, executes a right about. If the command were: 1. **By threes, right about,** 2. **MARCH,** the leading Nos. 1, 2, and 3 would simultaneously execute an individual about. The next group

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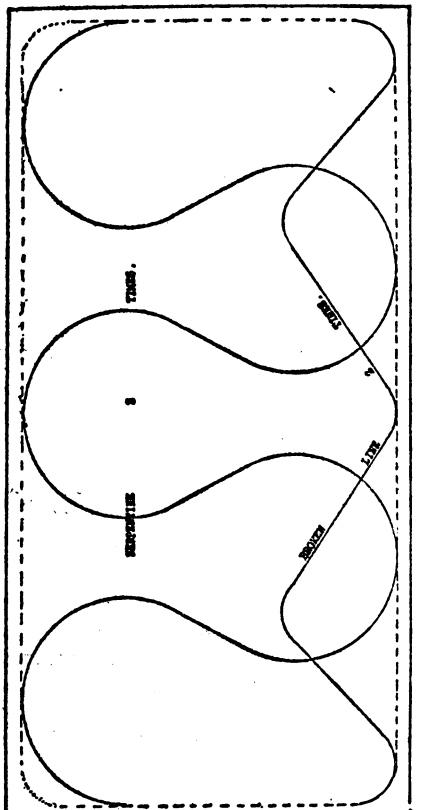

PLATE 47.

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of threes would advance to the same ground and execute the same movement, and so on throughout the column.

Other commands are: 1. **Threes, circle right (countermarch or column right),** 2. **MARCH**; and, 1. **By threes, by the right flank (countermarch or right oblique),** 2. **MARCH.** The former indicates a successive execution by each man within his set of threes acting as a unit, all the sets of threes executing the movement simultaneously. The latter indicates a successive movement by each set of threes and a simultaneous execution by each member of a set as it arrives on the ground where the leading set began the movement. (Pl. 48.)

337. Work by threes offers an excellent opportunity for variety and for keeping up the attention and keen spirit of a section. The variations are innumerable and depend upon the ingenuity of the instructor. Proficiency in this work arouses pride and a desire to excel. Moreover, smoothness and proficiency therein indicate the highest control of the horse and the proper use and application of the aids.

By forming threes abreast still greater intricacies may be introduced.

338. EXERCISE AT WILL: Riding-school work favors much practice at will (individual exercises prescribed by the instructor), in which the riders work independently of each other. The instructor watches special individuals and seeks to correct their faults. The riding hall, riding court, or rectangle serves only to indicate directions; each man practices as if he were alone without regard to distance or alignment. Each should choose his ground so as to avoid interfering with his neighbors.

4. Useful Formations and Exercises.

339. The following exercises are not only of value in teaching the application of the aids, but they are of use in forming,

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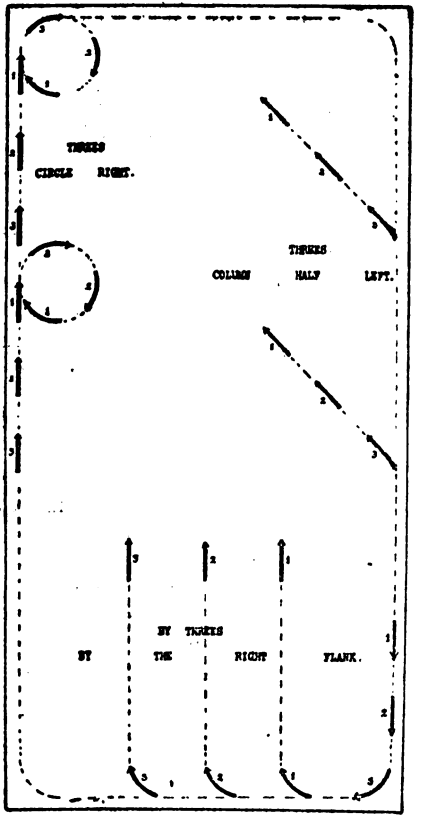

PLATE 48.

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placing, or marching the squad either in the riding school or outside.

Guides.

340. When two or more soldiers march in line the instructor, as soon as the march is begun, may designate the element on one flank or the other as the guide of the movement, thus: **Guide right (left).**

The other men align themselves on the guide thus indicated and maintain their intervals from that flank.

When marching in line and the guide is not announced by the instructor, the element in the center is, without indication, the guide of the movement.

If marching in column of files, or if marching obliquely, the leading element is, without indication, the guide of the movement.

The guide is responsible that the direction and rate of march are properly maintained.

To Break from Line Into Column of Files.

341. Being boot to boot in line, at a halt: 1. **Right (left) by file**, 2. **MARCH**. The man on the right moves his horse straight to the front at a good walk. When within 3 yards of the track, or, if outside, when he has advanced 3 lengths to the front, he executes by the right flank, and takes the track or moves straight in the new direction. Each of the other men in succession, when the rider on his right has advanced about 2 yards, moves his horse straight to the front and executes by the right flank on the line established by the first rider. The men then follow each other in column at about one horse length.

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If marching, all halt at the command **march**, except the man on the right. The movement is then executed as from a halt. If it is desired to execute the movement at the collected trot or gallop the command for the gait precedes the command **march.** Each rider first moves one horse length to the front at a walk and then takes up the gait ordered.

If in line with intervals of one horse length, the movement is similarly executed, each man moving out when the croup of the horse on the right is opposite his own horse's head.

If it is desired to march at greater or less distances the command: **At (so many) lengths (or yards) distance** precedes the first command, and the riders gauge their distances accordingly.

Every horse must remain against the bit, stand squarely on all four feet, and absolutely still, until the rider gives the proper aids to move out. The rider must then make him move straight to the front and execute the turn properly, and not permit him to oblique off to the right.

To Increase Distances in Column.

342. Being in column of files at the halt: 1. **To (so many) lengths (or yards)**, 2. **Take distance**, 3. **MARCH.** The leading man moves out at the command **march.** The men in rear move out successively, each as soon as the man preceding him has gained the distance prescribed in the command.

If marching at the walk, the leading man continues the walk: the other men halt at the command **march** and then execute the movement as before.

If marching at the trot or at the walk and the command be **trot**, the movement is similarly executed, the leading man moves

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at the trot, the other men take or continue at the walk, and then take up the trot successively in time to conform to the movement.

The commands are the same, and the execution is similar when the riders are in column of twos.

To Decrease Distances in Column.

343. Being in column of files at the halt or marching at the walk: 1. **To (so many) lengths (or yards)**, 2. **Close**, 3. **MARCH.** The leading rider remains halted or halts. The remaining riders move or continue at the walk, each one halting successively, when the distance from the head of his horse to the croup of the one in front is that prescribed in the command.

If marching at the trot or at the walk and the command be **trot**, the leading man moves at a walk. The men in rear continue at or take up the trot, each one taking the walk as he gains the prescribed distance.

The commands are the same and the execution similar when the riders are in column of twos.

To Form Line to a Flank from Column of Files.

344. 1. **Right (left) into line**, 2. **MARCH.** 3. **Squad**, 4. **HALT.** The leading man marches by the right flank; all the others continue straight forward, and each successively marches by to the right flank when 1 yard in rear of the point where the man preceding him began to turn. The leading man halts at the command; each of the others halt when on a line with the leading man and to his right.

The instructor is careful to see that the horses when halted are correctly disposed and perpendicular to the line.

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The execution of this command places the men in line boot to boot. Should the instructor desire the interval other than this he precedes the above command with: **At (so many) lengths (or yards) interval.**

345. 1. **On right (left) into line,** 2. **MARCH,** 3. **Squad,** 4. **HALT.** Executed as in the preceding paragraph except that each man successively turns to the right when 1 yard **beyond** the point where the preceding man began his turn. Should the instructor desire an interval other than that of boot to boot, he precedes the above command with: **At (so many) lengths (or yards) interval.**

To Form Column of Twos from Column of Files.

346. Being in column of files at the halt, or marching at the walk: 1. **Form twos,** 2. **Right (left) oblique,** 3. **MARCH.** The leading man moves one horse length to the front and halts. The second man obliques to the right until uncovered, when he marches straight to the front and halts boot to boot abreast of the first man. The third man closes to 1 yard from head to croup on the first man, the fourth man obliques to the right, and so on down the column, each man looking ahead in sufficient time to avoid obliquing out of the column if he is to become the left man in a set of twos.

If marching at the trot or at the walk and the command be **trot,** the leading man moves at a walk. The men in rear continue at, or take up, the trot, each one taking the walk as he reaches his place in column of twos.

To Form Column of Files from Column of Twos.

347. Being in column of twos at the halt: 1. **Right (left) by file,** 2. **MARCH.** The right man of the leading two moves straight to the front. The man on his left holds his horse

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straight until the first man has passed him, when he executes **right oblique** and follows at one horse length from head to croup. Each of the other twos breaks in the same manner as soon as the left man of the preceding two commences to oblique.

If marching at the walk the right man of the leading two continues the walk; the other men halt at the command **march** and then execute the movement as before.

If marching at the trot or at the walk and the command be **trot**, the movement is similarly executed, the right man of the leading two moves at the trot. The other men take, or continue at, the walk, and then take up the trot successively in time to conform to the movement.

To Break from Line into Column of Twos.

348. Being boot to boot in line at a halt and twos counted from right to left: 1. **Right (left) by twos, 2. MARCH.** Executed as in paragraph 341, except that each two in succession moves out together so as to follow in column at a distance of 1 yard. The rider on the side toward which the turn is made marches by the flank as soon as he has gained the prescribed distance to the front. The man on the outside of the turn conforms. He slightly increases the gait of his horse so as to come abreast of the other man just after the turn is completed.

To Form Line to a Flank from Column of Twos.

349. Executed at the commands, and, with obvious modifications, as prescribed in paragraphs 344 and 345.

To Change Direction.

350. Being in column of files: 1. **Column right (left), 2. MARCH.** The leading man marches by the flank; the other men

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march squarely up to the turning point and execute the change of direction successively on the same ground. **Column half right (half left)** is similarly executed, the change of direction being 45° instead of 90°.

Being in column of twos. The movement is executed by the same commands as in the preceding paragraph. In each set of twos the man toward whom the turn is made executes by the flank. The man on the outside of the turn conforms. He slightly increases the gait of his horse so as to come abreast of the other man just after the turn is completed.

5. Gaits.

351. Three gaits are recognized in military equitation, drill, and maneuver, as follows: The **walk, trot,** and **gallop.** These, however, are subject to different rates of speed. Those usually considered are as follows:

Slow walk: 2½ to 3 miles per hour, 66 to 88 yards per minute.

Walk (regulation): 4 miles per hour, 118 yards per minute.

Walk out: 4 to 5 miles per hour, 118 to 147 yards per minute.

Slow trot (a jog trot): 6 to 6½ miles per hour, 176 to 190 yards per minute.

Trot (regulation): 8 miles per hour, 235 yards per minute.

Trot out: 10 miles per hour, 295 yards per minute.

Extended trot: 12 miles per hour, 352 yards per minute.

Slow gallop: 9 to 10 miles per hour, 265 to 295 yards per minute.

Gallop (regulation): 12 miles per hour, 352 yards per minute.

Extended gallop: 16 miles per hour, 470 yards per minute.

The slow trot and slow gallop are the gaits most used in the early training of recruits. They are especially valuable for riding without reins or stirrups and for the suppling exercises.

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The **slow walk** is used when marching with dismounted troops: it is used but little in training the rider.

At the regulation or maneuver gaits experience has shown that the speed is such as, on the average, to render the horse capable of longer sustained action without waste of energy, and that his endurance and useful work are accordingly greater than at the other speeds. Extended speed at any gait rapidly exhausts a horse and should therefore be avoided, while a slow speed at any gait does not work the horse to his limit of greatest efficiency. The regulation gaits are therefore used habitually when riding out of doors. The work in the extended area during the third period (**356**) must be such as thoroughly to impress the cadence or tempo of these gaits on the minds of the men.

The Walk.

352. The walk is a gait in which the feet are lifted in succession and put down in the order of their lifting. If the right front foot begins the gait, the other feet are lifted in the following order: Left hind, left front, right hind. The walk should be free, easy, and elastic.

The Trot.

353. The trot is a gait at which the horse springs from one diagonally disposed pair of feet to the other; between the beats all the feet are in the air. The right front and the left hind are called the **right diagonal**, the left front and the right hind the **left diagonal**.

The Gallop.

354. The gallop is the most rapid of gaits. It must not be used unnecessarily over long distances, particularly on hard

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roads, where the concussion on the feet is severe, nor when the saddle is packed. However, when the rapidity of the normal trot is not sufficient, the rider, when out alone, should take the gallop in preference to increasing the speed of the trot.

The horse is said to **lead right** when the feet on the right side are more advanced than the corresponding feet on the left side. When the feet are advanced in the inverse order the horse is said to **lead left.**

The gallop is marked by three beats and a period of suspension. If the horse be leading right, the first beat is marked by the left hind foot, the second by the nearly simultaneous placing of the right hind and left front feet, and the third by the placing of the right front foot. The horse then leaps into the air from, and advances the right front foot. In leading left the beats are right hind, left hind and right front, left front.

A horse gallops **true** when he leads right in turning to the right, and leads left in turning to the left.

He gallops **false** when he leads left in turning to the right, or conversely. A horse is **united** when he gallops right (left) in front and right (left) behind. He is **disunited** when he gallops right in front and left behind, or conversely.

The gallop should be begun on the circle, because the feet are then favorably placed for taking and maintaining the proper lead. The horses thus start off more calmly and the rider is enabled to regulate the pace by describing a circle of greater or less circumference.

As soon as the horse breaks into the gallop the rider should move in cadence with his horse. The back and legs unite in the rythm of the gait, the hands accompany gently and without exaggeration the movements of the head and neck.

During the gallop the command **at ease** is frequently given. The riders execute the suppling exercises which have been in-

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dicated as necessary in each case; they abandon themselves completely to the motion of the horse and thus acquire ease and flexibility. Prolonged periods at the gallop on calm and free-moving horses are most favorable for easily obtaining this result.

SECTION VII.—ELEMENTARY TRAINING IN EQUITATION AND HORSEMANSHIP, THIRD PERIOD.

355. The work of this period has for its object abundant and varied practice for the purpose of strengthening the soldier's riding muscles, of confirming and strengthening his seat, and of confirming a correct, easy, unexaggerated but effective use of the aids. It seeks also especially to fit and prepare him to intelligently and completely take up his duties as a driver.

The work of this period should include, besides further practice in the exercises outlined for the first and second periods, work on long lines and exercises over varied ground.

Work on Long Lines.

356. This work is carried on in an outdoor rectangle, the dimensions of which should be 118 by 235 yards. These two distances represent approximately those covered by a horse in one minute at the regulation walk and trot, respectively. The sum of a side and an end, taking in consideration the distance lost in rounding the corner, represents the distance covered by a horse in one minute at the regulation gallop, and the sum of one side and two ends, the distance covered by a horse in one minute at the extended gallop.

In work on a rectangle of extended dimensions the regulation gaits and the extended gallop only are used, and the movements

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executed are limited to changes of direction. The men are disposed on the track at large distances, not less than three horse lengths. Movements by threes are particularly favorable. Usually one man or one group is designated as the leader, and the others, wherever located, conform to the movement. The gait and movement of the leader are designated by the instructor.

Advantage is taken of this work to teach the men the prescribed signals and bugle calls.

In addition to its beneficial effect upon the training, education, and conditioning of the horse this work serves as a transition from work in the riding school to riding on varied ground and on the road. It teaches the rider to regulate the gait and to acquire real control over his horse; it strengthens his seat and makes him expert in the proper use and accord of the aids; it teaches both rider and horse calmness and familiarizes the former with the proper cadence of the maneuver walk, trot and gallop, and the extended gallop.

Work on Varied Ground.

857. The work on varied ground has for its object the training of the men in riding their horses over any terrain, in making them familiar with difficult routes and crossings which they might encounter in campaign, and in regulating their gaits so as to husband the strength of their horses.

The instructor conducts his class across fields, through woods, and in general over the most varied terrain at his disposal.

He may divide the squad into small groups, each under a noncommissioned officer, who conducts the group and regulates the gait over a route designated by the instructor.

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358. The instructor inculcates in the riders the principles which should govern them when left to their own devices, such as the following:

On leaving the stable move at a walk for at least a mile in order to get the blood circulating in the horse's legs.

Vary the gait, but in training do not depart from the regulation speed prescribed for each gait.

Choose for the rapid gaits nearly level ground. Going uphill rapidly necessitates great effort on the part of the horse, but it is better than going downhill at a rapid gait which exposes him to injuries from the saddle and equipment, and is hard on his forelegs.

Extend progressively the periods at the faster gaits.

Regulate the periods spent at the intermediate gaits by the degree of rapidity with which the total distance must be covered.

Seek, under all circumstances, good and, if possible, soft footing to save the horse's legs, and keep him, therefore, along the edge of metaled roads rather than on them.

Choose hard ground when smooth and level in preference to ground that is heavy, uneven, or sloping to one side, as, for instance, the sides of a high-crowned metaled road.

Finish at a walk, more or less prolonged as the journey has been more or less long and trying, so that the horse shall always come in with a dry skin and normal respiration.

359. To these general principles, which must be practically demonstrated, the instructor adds such counsel as his experience dictates and such remarks as the nature and state of the terrain may render advisable.

The following rules cover the majority of circumstances that will arise:

To ascend a steep slope, yield the hand as soon as the horse has been given his direction, carry forward the upper part of

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the body, and seize a lock of the mane near the middle of the neck under the reins.

To descend a steep slope, let the reins slip through the hand sufficiently to give the horse complete liberty of action; if necessary, grasp the cantle of the saddle with the right hand and maintain the body in a position about perpendicular to the horse's back.

Riders should be practiced in crossing a V-shaped ditch, about 18 feet wide and 10 feet deep, so that they go down one side and up the other. This is a valuable exercise, as no horse will face the opposite bank unless his head is left free.

Long, steep slopes should be ascended slowly and quietly, and when the top is reached the rider should dismount and permit his horse to blow.

All slopes should be descended directly; short, steep slopes should be ascended directly; long slopes may be ascended obliquely if the surface is not slippery.

In difficult ground the horse should be allowed to take the initiative; his instincts are a more reliable guide than the aids of the rider.

If marshy ground must be crossed, go slowly and avoid following in trace. If the horse goes down and becomes nervous and begins to plunge, dismount and lead.

The rider must learn to seek every means to spare his horse, especially when carrying a pack. In particularly difficult places he should dismount and lead.

The instructor gives the men much practice in riding across ditches and ravines, such as might be encountered in draft. He impresses them with the necessity of confirming the horses in crossing such places willingly, quietly, with even gait, and with no tendency to jump.

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860. Advantage is taken of the work during this period to teach the men how to cover distances at the different rates of speed as employed by couriers and Artillery scouts and agents. The rates of speed prescribed for this duty are **ordinary**, about 5 miles per hour; **rapid**, 7 to 8 miles per hour; and **urgent**, the highest speed consistent with certainty of arrival at destination. The men must be taught that the condition of the horse, the weather, and the state of the roads may make it necessary to diverge considerably from the speed ordered. The messenger must get his horse through. In peace this must be done without injury to the animal; in war it may be necessary to do it at the cost of fatally exhausting him.

The messenger rides the regulation gaits unless these are manifestly unsuited to his horse, in which case he rides at each gait, the tempo best suited to preserve the animal's strength.

The following variations in gaits are suggested as affording guides by which the various rates of speed may be ridden. In each case it is assumed that the horse is in condition, and that he has been warmed up by gentle exercise, and is therefore ready for increased effort.

Ordinary: Alternate 5-minute walk periods with 10-minute trot periods, and rest for the last 10 minutes in each hour. This, at the regulation gaits, gives 5⅓ miles per hour, and with alternate walk and trot periods of these lengths, the number of minutes of travel always closely approximates the number of tenths of miles covered. Thus after riding 18 minutes the messenger has covered 1.8 miles.

Rapid: Alternate 5-minute walk periods with 10-minute gallop periods, and rest for the last 10 minutes in each hour. This, at the regulation gaits, gives 7⅓ miles per hour.

Urgent: Combine walk, trot, gallop, or extended gallop periods as the particular case demands and as seem best adapted to

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save the horse. The longer the distance to be covered, the less must be the rate in miles per hour. Thus a horse of good breeding and in hard condition may be expected to cover 15 miles in one hour, while if the distance to be traversed is 30 miles, he should be given at least four hours if injury is to be avoided.

Similarly, the horse should not be pushed to his extreme speed unless the distance is very short.

Whether the speed to be ridden be **ordinary, rapid,** or **urgent,** the messenger at all halts must dismount and slightly loosen the girth to relieve the pressure from the back and to facilitate easier and deeper breathing. Unless scouring, the animal should be permitted to graze.

Frequently when trot periods and always when gallop periods are used the rider should make it the rule to dismount and lead his horse during the walk periods. Gallop periods or trot periods, when the rate is ordinary or rapid, should not, even for a horse in hard condition, be prolonged for more than 25 minutes without alternating with a walk period. When using the posting trot it is of little or no advantage to change diagonals during a trot period. It is easier on the horse to wait until the next trot period and then to post on the other diagonal. The messenger must endeavor to water his horse with sufficient frequency as to preclude his taking at any one time a big, heavy drink. Whenever it is possible or practicable to do so, the messenger should leave behind unnecessary articles of clothing or equipment so as to lighten to the utmost the load which his horse will have to carry. In many cases, however, it may be necessary for him to ride with full pack and also to carry food for himself and grain for his horse. The rider himself must be physically fit. A tired rider fatigues his horse very much.

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Distance rides, which tax to the utmost the endurance of both horse and rider, are the supreme and final tests of horsemanship.

Miscellaneous Work.

POSTING.

361. Posting, or rising to the trot, greatly diminishes the concussion produced by the rider's weight on the back and joints of the horse. It also makes breathing easier and facilitates the impulsion from the engagement of the hind feet. It is also less fatiguing to the rider than sitting down to the trot. Posting is habitually employed by the Field Artillery rider or driver and should be learned during this period of the instruction.

It is executed as follows: The horse moving at a trot, the rider inclines the upper part of his body forward, then supporting himself on the stirrups while maintaining the grip of the knees, he rises under the impulsion of the horse, maintaining his position detached from the saddle while the succeeding impulse is produced, again sits down in the saddle shoving his buttocks forward in doing so, and continues in this way, always avoiding every other impulse.

At the beginning the mechanism of posting is made easier to the rider by causing him to stroke the horse's neck or to grasp a lock of the mane or the pommel with either hand, thus determining the forward inclination of the body.

Its proper execution requires that the seat shall be raised moderately; that contact with the saddle shall be resumed gently and without shock; that the full support of the stirrup is obtained, while keeping the lower leg steady; that the ankle joint shall be supple; and that the heel shall be kept lower than the toe. Above all, the rider must be supple in the loins and convex them backward.

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CHANGING THE DIAGONAL IN POSTING.

362. In posting the rider is said to post on the right diagonal when after rising he sits down in the saddle at the instant the right fore foot comes to the ground.

It is important to instruct the rider to post for a time on one diagonal and then change to the other, so that the horse's legs will each perform the same amount of work and the chance of injury from the equipment will be reduced.

In the riding school the rider should always rise on the inside hind foot, because this foot, in response to the inner leg aid, is the only one that can properly place itself under the mass of the horse and support the weight during the change of direction in the corners; hence to insure automatically that the posting is done as much on one diagonal as on the other, the riders may be required to post on the left diagonal when riding to the right hand on the track and on the right diagonal when riding to the left.

The instructor occasionally requires each rider to inform him on which diagonal he is posting.

To teach the rider to change the diagonal the instructor directs him to diminish the weight borne on the stirrups and to retain his seat in the saddle for two successive beats of the horse's feet instead of one, and then to rise as before.

The rider will then find himself posting on the diagonal opposite to the one on which he was posting before.

PRELIMINARY FOR THE BATTERY MOUNTED.

363. To prepare recruits for their work with teams it is advantageous during this period frequently to form the section in a number of squads each composed of six or eight men in column of twos simulating six or eight horse teams. Such a

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formation is favorable for teaching the men the evolutions encountered in the battery mounted and for teaching them to obey signals and bugle calls. It is especially favorable for teaching the relative positions of the various horses of a team during a turn such as is involved in an about or a movement by the flank of an Artillery carriage.

364. For horse batteries it is of advantage during this period occasionally to form and maneuver the men under instruction as mounted gun squads.

CHAPTER II.—THE GUN SQUAD MOUNTED.

365. The special instruction required for the cannoneers of a battery of Horse Artillery embraces that of a gun squad mounted and that of two or more gun squads mounted.

Composition of the Gun Squad.

366. Each **gun squad** is organized as in paragraph **135.** Two of the privates act as horse holders for the cannoneers' horses.

367. A **caisson squad** is organized as in paragraph **136.**

368. When the gun squads march or maneuver with the battery each caisson corporal retains his post boot to boot with the lead or swing driver of his caisson.

Formation of the Gun Squad.

369. The gun and caisson squads are formed in double rank in the order prescribed in paragraphs **138** and **139** with an interval of 6 inches from knee to knee, and at a distance of 1 yard from the croups of the front-rank horses to the heads of the rear rank horses.

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370. In the gun squad Nos. 6 and 7 and in the caisson squad the highest numbered cannoneers in each rank act as horse holders. If there are less than six cannoneers in the squad the highest numbered cannoneer acts as horse holder, the horses being linked in single rank.

371. The guide of the gun squad is the gunner; of the caisson squad, the caisson corporal, or, in his absence, the cannoneer on the right of the front rank.

To Form the Gun Squad.

372. The instructor indicates the point where the right of the squad is to be and the direction in which it is to face and commands: **LEAD OUT.**

The gunner repeats the command and places himself where the right of the squad is to rest, faced in the proper direction.

The men lead out and form in double rank, taking the position of stand to horse, with intervals of 18 inches between horses; each rear rank man places his horse at the distance of 1 yard from the croup of the horse of his front rank man, the horses covering each other.

To Mount.

373. 1. **Cannoneers prepare to mount,** 2. **MOUNT.**

Executed as explained in "The Soldier Mounted" (**240**), the cannoneers mounting without moving their horses out of ranks; if necessary they make them give way slightly to the right or left.

If the command be: 1. **Cannoneers,** 2. **MOUNT,** the cannoneers execute at the command **mount** all that has been prescribed for the command **prepare to mount** and **mount.**

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To Dismount.

374. 1. **Cannoneers prepare to dismount,** 2. **DISMOUNT.**

Executed as explained in "The Soldier Mounted" (**245**), the cannoneers dismounting without moving their horses out of rank; if necessary, they make them give way slightly to the right or left.

If the command be: 1. **Cannoneers,** 2. **DISMOUNT,** they execute, at the command **dismount,** all that has been prescribed for the commands **prepare to dismount** and **dismount.**

Alignments.

375. The alignments are first taught by requiring the cannoneers to align themselves upon two files establised as a base.

The squad being in line at a halt, the instructor causes the first two files on the flank toward which the alignment is to be made to move forward a few steps and establishes them as a base; he then commands: 1. **By file,** 2. **Right (Left),** 3. **DRESS,** 4. **FRONT.**

At the second command each man of the file on the right gathers his horse and at the command **dress** moves forward; when near the line each man slackens the gait, moves up slowly, casts his eyes to the right so as to see the buttons on the breast of the second man from him, sits squarely on his horse, keeps his horse straight in ranks, and touches lightly with his stirrup the stirrup of the man on his right. The other men dress in the same manner, each moving off when the preceding man halts.

The instructor verifies the alignment and gives the command **front** when the last man is aligned, at which command all cast their eyes to the front. All movement in the ranks must then cease.

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The instructor observes in the alignment: That each man gathers his horse at the proper time; that he moves his horse steadily and keeps him square to the front; that he sits squarely on his horse and dresses promptly as he arrives on the line; that he does not lean his head or body to the front or rear; that he keeps the proper interval, touching lightly the stirrup of the man on his right; that he relaxes the reins and legs as soon as he has dressed.

376. In the first drills the basis of the alignment is established parallel to the front of the squad, and afterwards in oblique directions.

377. The cannoneers having learned to align themselves man by man, the instructor establishes the basis of alignment as before and aligns the squads by the commands: 1. **Right (Left)**, 2. **DRESS**, 3. **FRONT.**

At the command dress all the men except the base files move forward and dress up to the line.

378. Alignment to the rear is executed on the same principles; the instructor commands: 1. **Right (Left) backward**, 2. **DRESS**, 3. **FRONT.**

All the men, except the base files, rein back, keeping their horses straight, halt in line with, or a little in rear of the base, and immediately dress up to the line.

The Rests.

379. Executed as prescribed in "The Soldier Mounted" (258).

To Fall Out.

380. The squad being in line dismounted: 1. **By the right (left)**, 2. **FALL OUT.**

The front rank man on the right followed by the man behind him leads his horse 1 yard straight to the front and then directly

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to the stable or picket line. Each of the other front rank men executes the same movement so as to follow the horse of the rear rank man next on his right at a distance of 1 yard.

To Dismiss the Squad.

381. Executed as prescribed in "The Soldier Mounted" (**259**).

To March in Line.

382. Being in line at a halt: 1. **Forward,** 2. **MARCH.**

The squad moves off promptly, the guide marching straight to the front at the regular gait.

The instructor observes that the squad marches straight to the front at the regular gait; that the men keep their horses straight in ranks; that they maintain the proper interval from the side of the guide; that they yield to pressure from that side and resist pressure from the opposite direction; that while habitually keeping the head to the front, they occasionally glance toward the guide; that if in advance they rein in gradually; that if in rear they gradually increase the gait until the alignment is regained.

The instructor will impress upon the men that the alignment and interval can be preserved only by uniformity of gait and by keeping the horse straight in the line of direction.

To call attention to the loss of alignment or interval the instructor commands: **DRESS.** At this command the men glance toward the guide and then make the necessary correction.

383. Marching in line, to effect a slight change of direction: **Incline to the right (left).**

The guide turns his horse slightly to the right and marches in the new direction; the other men gradually conform to the

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movements of the guide, increasing or diminishing the gait according as the change is toward or opposite the side of the guide.

To Halt.

384. 1. Squad, 2. **HALT.**

To Rein Back the Squad.

385. Being in line at a halt: 1. **Backward,** 2. **MARCH.**

All the men rein back, dressing on the guide.

This movement is used for short distances only.

To Oblique in Line.

386. 1. **Right (Left) oblique,** 2. **MARCH.**

At the command **march** each man obliques to the right (**305**), his right knee in rear of the left knee of the man on his right. The squad moves in the new direction, regulating by the right, in a line parallel to the original front.

If the command **halt** be given while marching obliquely the men halt faced in the direction in which they were marching.

To resume the oblique march: 1. **Forward,** 2. **MARCH.**

While obliquing, to resume the march in line: 1. **Left (Right) oblique,** 2. **MARCH.**

To Turn and Halt.

387. Being in line: 1. **Squad right (left),** 2. **MARCH,** 3. **FRONT.**

At the command **march** the front rank man on the right executes by the right flank and halts; each of the other men turns his horse to the right, approximating the oblique and moving by the shortest line without changing the speed, places himself abreast of the pivot man. The rear rank men conform to the movement of the front rank and place themselves, covering their

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file leaders at a distance of 1 yard. All dress to the pivot without command.

The instructor verifies the alignment from the pivot.

Squad half right (half left) is executed in the same manner; the pivot makes an oblique to the right.

To Turn and Advance.

388. Being in line at the halt or at the walk: 1. **Right (Left) turn,** 2. **MARCH.**

The front rank man on the right executes by the right flank and moves forward in the new direction without increasing the speed; each of the other men turns his horse to the right, approximating the oblique, and, moving at the trot by the shortest line, places himself abreast of the pivot man, when he takes the gait and direction of the latter. The rear rank men conform to the movements of the front rank and place themselves, covering their file leaders at a distance of 1 yard. During the turn the guide is, without command, on the pivot flank; the original guide is resumed without indication as soon as the turn is completed.

If marching at the trot the pivot man continues at the trot, each of the others slightly increases his speed until he arrives on the line.

If marching at the gallop the execution is similar, the pivot man continues at the gallop, each of the others slightly increases his speed until he arrives on the line.

Right (Left) half turn is executed on the same principles; the pivot man makes an oblique to the right.

The About by Squad.

389. Being in line: 1. **Squad right (left) about,** 2. **MARCH.**

Executed as in paragraph 387, except that the turn is through an arc of 180°.

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To March by the Flank from Line.

390. Being in line at a halt: 1. **By the right (left) flank,** 2. **MARCH.**

The front and rear rank cannoneers on the right simultaneously execute by the right flank; each rear rank cannoneer, after completing the turn, closes in so as to ride boot to boot with his front rank man. The movement is taken up successively by the other cannoneers in time to follow the two next on the right at a distance of one yard.

If marching, the men on the flank toward which the movement is made execute the turn at the command **march**; the others halt and then turn in succession.

391. The squad having been marched by the flank is now in flank column. Each cannoneer should so conduct his horse that the man of his rank who immediately precedes him shall hide all the other men in his front.

To Form Line to the Right or Left from Flank Column.

392. 1. **Right (Left) into line,** 2. **MARCH,** 3. **Squad,** 4. **HALT,** 5. **FRONT.**

Executed as in "The Soldier Mounted" (**344**), each rear rank man checking his horse so as to follow his front rank man; the command **halt** is given at any time after the leading file has advanced its own length in the new direction. The other files dress as they arrive on the line and take the prescribed interval (**369**); the instructor places himself near the right to superintend the movement and gives the last command when all are aligned.

The instructor commands **left (right) into line,** according as the flank column is right or left in front.

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393. The flank column is **right in front** when the front rank men are on the left of the rear rank men; the column is **left in front** when the front rank men are on the right of the rear rank men.

To Oblique in Flank Column.

394. 1. **Right (Left) oblique**, 2. **MARCH.**
To resume the oblique after halting: 1. **Forward**, 2. **MARCH.**

To Change Direction in Column of Twos.

395. 1. **Column right (left)**, 2. **MARCH.**
Executed as in "The Soldier Mounted" **(350)**.

Maneuvers of Two or More Squads.

396. If it is desired to train two or more gun squads mounted in the formations and movements laid down in the Gun Squad Mounted, the squads are maneuvered by the same commands and means as those prescribed for a single squad, with obvious modifications.

To Lead Out.

397. The cannoneers lead out by squads in the order of the numbers of their sections. At the command **lead out** by the instructor or senior noncommissioned officer present, the cannoneers of the first section lead out as already explained; the leading cannoneer of each of the squads moves off in time to follow the last cannoneer of the preceding squad and places his horse 15 yards to the left of the front rank horses of his squad. If desired, this interval may be diminished.

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To Post the Squads at Their Carriages.

398. The squads are marched to the park in flank column or column of squads; each gunner, on arriving near the park, marches his squad to its carriage and posts it in its position.

To Leave the Park.

399. The squads are marched by the flank as prescribed for a single squad mounted; the rear squads, if necessary, take the trot at command of their gunners in order to close up to the proper distance.

CHAPTER III.—THE DRIVER.

SECTION I.—OBJECT AND SEQUENCE OF THE INSTRUCTION.

400. The object of this instruction is the training of the Field Artillery driver:

(*a*) In harnessing and unharnessing and in the proper fitting, cleaning, and care of harness.

(*b*) In managing and maneuvering a single pair.

(*c*) In managing and maneuvering the different pairs of a team in draft.

In the instruction of recruits quiet, well-trained horses will be used.

401. In order to secure and maintain interest, and in order that the work may completely cover the subject it is of importance that the instructor adhere to a systematic and progressive sequence of instruction.

In all driver instruction, whether it pertains to the training of recruits or to the specialization of men as drivers, work in equitation should be continued as a part of the daily program.

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This instruction may properly be a review of that outlined under "The Soldier Mounted," or it may be more advanced as indicated in paragraph **210.**

402. The following subjects arranged in a proper sequence will be covered in the training of the driver. With recruits, the **Preliminary Instruction** may be pursued as a part of their daily program during the latter part of their instruction in "The Soldier Mounted." The **Mounted Instruction,** however, involving as it does the handling of two horses, will not, except in case of emergency, be begun until the instruction outlined under "The Soldier Mounted" has been completed.

Preliminary Instruction.

1. Terms.
2. Nomenclature of harness.
3. Disposition of harness.
4. Harnessing and unharnessing.
5. Adjustment and fitting of harness.
6. Cleaning and care of harness.
7. Rolling drivers' rolls and packing equipment on the saddle.

Mounted Instruction.

8. General provisions and miscellaneous instruction.
9. Management of the pair.
10. Teams and their management in draft.

403. Concurrently with the instruction covering these subjects advantage should be taken of rests during the lessons and of inclement weather to lecture to the men and question them on points relating to:

(*a*) The care, management, and conditioning of horses, having especial reference to the draft horse on the march and in the field.

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(*b*) Driving and draft and methods of overcoming difficulties likely to be encountered.

(*c*) The necessity for careful and constant adjustment and fitting of harness and the proper care of shoulders and backs.

(*d*) The necessity for and how to obtain condition.

(*e*) The necessity for and object of horse training.

(*f*) Other useful knowledge connected with the management of horses in garrison or in the field.

The instructor should endeavor by every possible means to stimulate the interest of the men and to excite their enthusiasm over their work with and their knowledge of horses. This interest and enthusiasm add to efficiency, not only in overcoming difficulties incident to transport but also in the attention and care bestowed upon the animals.

SECTION II.—THE STANDARD REQUIRED.

404. The training of the driver is largely a matter of experience and practice which becomes perfect only with time. However, the standard required and outlined in paragraph **29** should ordinarily be attained within three months after completing the work outlined under "The Soldier Mounted."

The time devoted to a single lesson should be not less than that prescribed in paragraph **224.** Often, however, the instruction of the drivers will be held at the same time, and must, therefore, be made to fit in with the specialization of the cannoneers in their duties.

SECTION III.—PRELIMINARY INSTRUCTION.

Terms.

405. The horses assigned to a single driver are called a **pair;** the horse on the left side is called the **near horse;** the other the **off horse.** The driver rides the near horse.

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The pairs assigned to the traction of a single carriage are termed collectively a **team.** A team usually consists of not less than three pairs. The leading pair is called the **lead pair;** the one attached to the carriage the **wheel pair;** the pair between these two the **swing pair.** When there are two pairs between the lead and wheel pairs, the pair next behind the lead pair is called **the lead swing;** the other the **wheel swing pair.** When there are five pairs the one between the lead swing and the wheel swing is called the **middle swing** pair.

Nomenclature of Harness.

406. The instructor, using a harnessed pair or a hitched team, points out the different parts of the harness, explains the purpose of each, and instructs the drivers in the correct nomenclature as given in the Handbook.

Each driver is required to become expert in taking the harness apart and in quickly and correctly assembling it.

Disposition of the Harness.

407. In garrison.—The harness is arranged on two pegs on the heel posts, as follows:

On the upper peg: Both bridles hung from the peg by their headstalls; the traces of both horses hung over the peg close to the heel post; the off saddle with its attachments over the seat; the blanket across the saddle; both collars, unlocked, over the blanket.

On the lower peg: The near saddle and blanket arranged as prescribed for the off harness.

The neck yoke, with martingales attached, is hung from a spike driven into the side of the heel post.

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To prevent injury to the off saddle when the blankets are out drying, the sack is put over the harness and the collars are then placed across the sack.

If the harness pegs are on the left heel post as the driver faces the manger, the saddles are placed with the cantles against the heel post; if the pegs are on the other side of the stall, the pommels are placed against the heel post.

408. In the field.—The pole prop is placed under the end of the pole. The wheel traces are detached from the collars only and laid back on the footboards. The remainder of the harness of the near-wheel horse is placed on the pole next to the doubletree, arranged as follows: The saddle with its attachments over it, the blanket across the saddle, the bridle and collar over the blanket. The remainder of the off-wheel harness is placed next, then the swing, and lead harness in the same order. The traces of the swing and lead harness, folded once, are placed across the saddle. The neck yoke is placed on the footboard.

409. In entraining.—The harness belonging to a single pair is placed in a harness sack in the following order: Neck yoke; collars, one in each end of the sack; bridles, one inside of each collar; traces looped around and outside of the collars; blankets, one on each collar; saddles, one on each blanket. The harness sack is securely tied and is tagged to show (1) the pair in the team, (2) the carriage, (3) the section.

When harness sacks are not taken, each horse's harness may be packed in a grain sack and appropriately tagged.

Harnessing and Unharnessing.

410. In the training of recruits the men are first permitted to watch the instructor or an assistant perform in detail all the various steps in harnessing and unharnessing, during the prog-

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ress of which every point is carefully explained to them. After this, the instructor calls upon the recruits in turn to perform a single detail of the harnessing or unharnessing, as in this way they are enabled to observe and profit from each other's mistakes. A pair of quiet, well-trained horses in a double stall is then assigned to each recruit to harness and his work is carefully supervised by the instructor or an assistant.

To avoid striking, frightening, or spoiling the horses the men are impressed with the necessity of working about them gently and quietly and of handling the harness carefully.

To Harness.

411. The harness being on the heel posts, the instructor causes the men to **stand to heel (236)**; and commands: 1. **By detail,** 2. **HARNESS.**

Collar.—At this command each driver puts on and locks the collar of his off horse, then that of his near horse. To avoid pinching and clamping a portion of the skin or mane between the collar and the collar pad, the collar is placed well up on the neck, locked, and then lifted gently to its position against the shoulders. By stooping down and looking at it, the driver should satisfy himself that the buckle latch is securely locked.

Saddle.—He puts on the blanket of the off horse, then the saddle with its attachments, taking care not to displace the blanket; buckles the collar strap to the saddle; turns back the back strap and, in the case of wheel drivers, the breeching, fastens the crupper and completes the saddling **(228)**. He then saddles the near horse in like manner.

Traces.—He lays the middle of the traces of the off horse over the horse's back, behind the saddle, toggles on opposite sides, and, beginning with the off trace, passes the toggle through the

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trace loops from the rear and attaches them to the hame tugs on the collar. The traces of the near horse are then attached in the same manner. The rear ends of the traces are left hanging over the backs of the horses.

When the horses are harnessed for drill by pair, the traces, at the direction of the instructor, are either not attached or are **toggled up** by passing each trace over the back behind the saddle and slipping the ring of the trace chain over the toggle which attaches the opposite trace to the hame tug.

Bridle.—He bridles (**231**) first the off horse, passing the reins through the roller, and then the near horse.

Unless otherwise instructed, the halters are removed before bridling.

Couple.—He turns his pair about so as to face the stable driveway and attaches the hook at the end of the coupling rein to the right pommel ring of the near saddle. He then stands to horse (**237, 425**).

Yoke.—The wheel driver takes down the neck yoke; places himself between his horses, facing in the same direction with them; fastens the breast strap of the off horse, then that of the near horse; passes the martingale of the near horse between the forelegs, through the standing loop on the cincha; attaches the hooks at the end of the side straps to the martingale D ring; secures the martingale of the off horse in the same manner; then passes out in rear of the near horse and stands to horse.

412. To harness without detail: **HARNESS.**

To Unharness.

413. 1. By detail, 2. **UNHARNESS.**

Unyoke.—At this command the wheel driver passes between his horses from the rear, unhooks the martingale of his near horse, and draws the martingale through the standing loop

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on the cincha; then does the same with respect to the off horse; unhooks the inside end of each breast strap, detaches the neck yoke, and hangs it on its spike.

Uncouple.—Each driver steps in front of his pair and uncouples. If the horses are facing the stable driveway, he turns them about to face the manger.

Unbridle.—He unbridles (**235**) the near horse, puts the halter on, fastens the halter to the manger, and hangs the bridle on the upper peg next the heel post. He then unbridles the off horse in like manner.

Traces off.—He disengages the near trace of the near horse and lays its middle over the saddle, toggle on the near side; disengages the off trace and lays it beside the near trace, toggle on the off side; removes the traces and hangs them on their peg. In like manner he removes and hangs up the traces of the off horse.

Unsaddle.—He unfastens the crupper of the near horse and places the attachments in the saddle; unfastens the collar strap and then unsaddles the near horse (**229**), placing the saddle on the lower peg. He removes the blanket from the near horse and places it over the saddle, the folded edge away from the heel post. He then unsaddles the off horse in like manner.

Collar off.—He removes the collar of the near horse, then that of the off horse, and hangs them up, the near collar next to the post, the zinced surfaces away from the heel post.

414. To unharness without detail: **UNHARNESS.**

To Harness and Unharness in the Field.

415. Executed as in garrison, but in such order as to suit the disposition of the harness. Thus, the order in harnessing is: **Collar, bridle, saddle, traces, couple, yoke.** In unharnessing: **Unyoke, uncouple, traces off, unsaddle, unbridle, collar off.**

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While harnessing and unharnessing, the horses are ordinarily tied by their halters to their carriages, as follows: The lead pair to the right wheel of the gun or caisson or to the end of the pole; the swing or lead swing pair to the right wheel of the limber; the wheel pair to the left wheel of the limber; and the wheel swing pair, if present, to the left wheel of the gun or caisson.

In harnessing or unharnessing by detail, drivers stand to heel after completing each detail of the instruction.

Adjustment and Fitting of Harness.

416. Drivers will be thoroughly impressed with the importance of bestowing constant and unremitting attention on the adjustment and fitting of their harness. They must learn early that a horse can not properly perform his work unless he is made comfortable in well-fitted harness. If the harness pinches, galls, or otherwise causes him discomfort, his sole idea will be to escape from the annoyance or pain thereby occasioned him, and he will become fretful, nervous, and unsteady in his work. This will not only add to his own distress, through a useless expenditure of strength and nervous energy, but by rendering the draft of the whole team unsteady it will needlessly increase the work and fatigue of the other horses.

417. Drivers must be made to appreciate the fact that every sore, every injury, every abrasion of the skin, is due to a certain definite cause which, if removed, can produce no further effect. If ill-fitting harness has escaped the notice of a driver while his horses were at work, any injury caused thereby must not escape his notice at the next stables. Failure to discover and report such injury at once to the instructor or to the chief of section is a neglect calling for disciplinary correction.

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418. Injuries due to the harness must be discovered in their very beginning and at once reported to the officer in charge of the horses. That officer then performs his duty unsatisfatorily if he lacks ingenuity and skill to modify or correct the fit of the harness so as to remove the cause of the injury.

419. It is only by constant attention on the part of all concerned—drivers, chiefs of section, chiefs of platoon, the officer in charge of the horses, and the captain—that the animals of a battery can be kept up to their work without more or less prolonged periods of enforced idleness due to harness injuries.

420. The **bridle** and **saddle** are fitted as prescribed in paragraphs **230** and **234**.

The **collar** should fit about the horse's shoulders and neck easily and uniformly. It should freely admit the thickness of the hand between the lower part of the collar and the throat and, when pulled to one side, should admit the thickness of the fingers between the sides of the collar and the neck. A short collar chokes a horse by pressing on the windpipe; a narrow one pinches and rubs the neck. A broad collar works about and galls the shoulders. More injuries result from collars that are too large than from collars that are too small.

The final test of the fit of a collar is to observe it carefully when the horse is in draft and, at halts, to notice what effect it is having on his shoulders.

After a collar has been properly fitted to a horse it should be marked with his battery number. This is conveniently done by painting the number just above the left draft spring on the inside of the collar.

The **back strap**, when adjusted, should admit the breadth of the hand between it and the horse's back. If too short, the crupper will cut the tail and the saddle will be displaced.

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The collar strap should not be tight; otherwise it will pull the saddle forward on the withers.

The surcingle, when used, should be buckled on the near side of the near horse and on the offside of the off horse, less tight than the girth and over it.

The hip straps should be so adjusted as to enable the **breeching body** to bear flat against the thighs and to rest from 12 to 15 inches below the dock. If this strap hangs too low, the action of the horse, when set into the breeching, will be interfered with; if it hangs too high, the side straps will rub the stifle.

The side straps are adjusted to cause the breeching body to bear quickly should the horse be required to check the carriage, but not so short as to impede the animal's movements while in draft. The exact adjustment can be obtained only by watching the horse in draft, both up and down grade.

The martingale is fastened by its cincha strap to the neck yoke. The length of this fastening should be such as to permit the D ring and D ring safe on the martingale to be well through the standing loop on the cincha, thus avoiding catching and interfering with the latter when the horse is set into breeching. The martingale must be kept smooth and soft or it will chafe the inner sides of the legs and rub the belly.

The breast straps should support the pole in a horizontal position. If the pole is too low, the effort of supporting it is increased; if too high, the martingale and neck yoke may rub the breast.

The loin straps should be adjusted so that the traces, when in draft, will be straight and without downward pull on the trace loops. Otherwise, galls on the back will result.

The traces.—The length of the lead and swing traces must depend in a great measure on the size of the horse and his stride.

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The rule for lead and swing pairs is to allow about 1 yard from head to point of buttocks when in draft. The length of the wheel trace is fixed, but allowance may be made for difference in the size of the horses by proper adjustment of the martingale and side straps. This will allow a minimum distance of about 14 inches between hind quarters and singletree for the average wheel horse when in draft. The traces should be adjusted by a strap under the belly or one over the saddle so that their direction shall be as nearly normal to the shoulders as possible to avoid any downward or upward pull on the collar. A downward pull on the collar will tend to gall or injure the neck, while an upward pull on it will tend to make it rise and choke the horse.

The rear trace chains of the lead and swing traces have a ring at one end and a hook at the other; the hook is passed through a "D" ring at the end of the trace and hooked back into any desired link. By this means the length of the lead and swing traces may be adjusted. Care must be exercised that the traces belonging to any one horse are of even length.

The **coupling rein** should be so adjusted as to permit the off horse properly to maintain his trace and yet to hold him to his place in the team.

Cleaning and Care of Harness and Horse Equipment.

421. Recruits are instructed in the proper methods of cleaning and caring for harness as described in Care and Maintenance of Equipment (**653–696**).

Rolling Drivers' Rolls and Packing Equipment on the Saddle.

422. The articles which make up the driver's equipment and the methods of packing them are prescribed in Part X. Recruits must quickly learn what articles comprise their equip-

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ment, how they are packed, and that rolls poorly made and carelessly packed cause loss of or damage to equipment, sores or injuries to their horses, and discomfort and expense to themselves.

SECTION IV.—MOUNTED INSTRUCTION.

GENERAL PROVISIONS AND MISCELLANEOUS INSTRUCTION.

Intervals and Distances.

423. Intervals between—

Pairs in line, 1-horse length, 3 yards.

Teams in line, 1-team length, 3 yards for each pair.

Hitched carriages in line, 1 hitched-carriage length, 17 yards for a 3-pair team.

Distances between—

Pairs in column, 1 yard.

Teams in column, 2 yards.

Hitched carriages, about 2 yards, or such that, when moved by the flank, the intervals will be as above.

Other intervals and distances are as prescribed in "The Battery Mounted."

Disposition of the Carriages of a Section.

424. The carriages of a section are said to be in **section column** when one is in rear of the other and hitched carriage distance from it. They are ordinarily parked in this formation.

They are said to be in **flank column** when abreast of each other at the interval prescribed for hitched carriages in line; in **double section** when abreast of each other at 2 yards interval.

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To Stand to Horse.

425. The driver takes the position with respect to the near horse prescribed for "The Soldier Mounted" (**237**) and also holds the coupling rein in his right hand when this is necessary properly to control the off horse. When it is held the coupling rein is not attached to the near saddle.

To Lead Out.

426. To form the pairs or teams after harnessing, the instructor indicates the order in which the drivers are to leave the picket line or stable and the place and character of the formation, and commands: **LEAD OUT**; or, 1. **First (such) section,** 2. **LEAD OUT.** The drivers, moving in the order directed and so as not to interfere with each other, lead out as explained in "The Soldier Mounted" (**238**). When necessary to lead or control the off horse the driver holds the coupling rein in the right hand. In such a case it is not attached to the saddle of the near horse.

If the pairs are to be led at once to the carriages the instructor may command: 1. **To your carriages,** 2. **LEAD OUT**; or, 1. **First (such) section,** 2. **To your carriages,** 3. **LEAD OUT.**

To Mount and Dismount.

427. Being at a halt: 1. **Drivers prepare to mount (dismount),** 2. **MOUNT (DISMOUNT).**

Executed as prescribed in "The Soldier Mounted" (**240, 245**). The whip, if in hand, is hung on its ring before dismounting.

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To Dismount the Drivers While Marching.

428. Being at a walk: 1. **Drivers,** 2. **DISMOUNT.**

Each driver dismounts without checking the gait, places the bridle reins of his near horse over the pommel, and walks beside him without touching the reins, unless it is necessary to check his pair; if either one of his pair lags, he speaks to him or touches him lightly with the whip.

If necessary to guide the carriage to a definite position, the driver takes the reins as in **stand to horse** and controls the movement.

If the instructor commands: 1. **Lead and swing drivers,** 2. **DISMOUNT,** only the drivers named dismount.

To Mount the Drivers While Marching.

429. Being at a walk: 1. **Drivers,** 2. **MOUNT.**

All the drivers who are dismounted mount without checking the gait.

If the instructor commands: 1. **Wheel drivers,** 2. **MOUNT,** only the drivers named mount.

Marching with the drivers dismounted will be practiced at first over smooth, level ground until the teams are taught to pull together and to walk with an even, regular gait.

Alignments.

430. Being in line of pairs, teams, or sections, unhitched, and at a halt, the instructor sees that the pair, team, or section on the flank toward which the alignment is to be made is in the desired position and commands: 1. **Right (Left),** 2. **Dress,** 3. **FRONT.**

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At the command **dress** the other drivers look to the right align themselves accurately, keeping their pairs straight and preserving their intervals. At the command **front** they turn their eyes to the front.

The instructor may place himself on either flank and give a general alignment by ordering any driver to move one or both of his horses forward or backward.

If the teams are hitched the alignment is made as prescribed in "The Battery Mounted" (**520**).

Guides.

431. When two or more pairs, teams, or carriages march in line the instructor, as soon as the march in line has begun, designates the element on one flank or the other as the guide of the movement, thus: **Guide right (left).** The other elements align themselves on the guide thus indicated and maintain their intervals from that flank.

If marching in column of pairs, teams, or carriages, or if marching obliquely, the leading element is without indication the guide of the movement.

The guide of a team or carriage is its lead driver. The guide of a section in section column is the guide of its leading carriage; in double section, the guide of its left carriage.

The guide is responsible that the direction and rate of march are properly maintained.

Rests.

432. The rests are executed and the attention resumed as in "The Soldier Mounted" (**258**).

When dismounted the drivers remain close to their pairs so as to keep them in place, and are required:

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ook to the p To raise the collars and examine the shoulders for in-
pairs strai s, reporting any discovered. The collars may be un-
nd front th ped and laid back on the saddle.

To rub the hand over the bearing surface of the collar to
r flank an hat it is clean and smooth.
move one With a cloth to wipe the perspiration, if any, from the
ing surface of the collar and from the shoulders.

nade as pr On marches, or when the draft has been such as to cause
dy and constant pressure against the shoulders, to restore
stimulate the circulation in them by hand rubbing, being
eful on finishing to leave the hair lying smooth and flat.

To look over and adjust such parts of the harness as need
riages m 420).
line has 1. In addition, if a wheel driver, to relieve the weight on
as the necks of his horses by properly placing the limber or pole
other e p; on muddy roads to wipe the mud off the martingales.
maints

To Hook Traces.

arriages **433.** The teams being in column of pairs in proper order
out ind om front to rear, the instructor commands: **HOOK TRACES.**

driver Each lead and swing driver goes to the rear of his off horse,
of its h ssing by his off side, and hooks the rear ends of the traces to
arriage he front ends of the corresponding traces of the pair in rear,
ate of eginning with the outer trace of the off horse and ending with
he outer trace of the near horse.

To Unhook Traces.

mmand **434. UNHOOK TRACES:** Each lead and swing driver backs his pair, if necessary, in order to unhook more easily. He then goes in rear of his horses, passing by the near side of his near

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horse, and detaches the traces of his pair, beginning with the outer trace of the near horse and ending with the outer trace of the off horse. As each trace is unhooked it is laid over the back of the horse in rear of the saddle.

To Post the Teams with their Carriages.

435. The teams, with traces hooked or unhooked, may be marched to their carriages in column, double-section column, or other suitable formation. As they approach the carriages the instructor commands: **TEAMS TO YOUR CARRIAGES.** At this command each team proceeds by the most direct route to its carriage, turning if necessary, and approaching it from the right or left limber wheel. When the team reaches its proper position the wheel driver commands: 1. Team, 2. **HALT,** causes the horse nearest the pole to step over it, and places his pair for hitching.

To Hitch.

436. The traces being hooked: 1. **Drivers,** 2. **HITCH.**

Each wheel driver dismounts, if mounted; passes behind the near horse; places himself between his horses, on the right of the pole; engages the end of the pole in the pole ring of the neck yoke; then goes behind the off horse and attaches his traces to the singletree, beginning with the near trace. He then passes around the rear of the carriage at double time, and hitches the near horse, beginning with the off trace.

He then mounts, if mounted when the command was given; if dismounted, he stands to horse.

437. If cannoneers be present the instructor may command: 1. **Cannoneers,** 2. **HITCH.**

The cannoneer posted nearest the left wheel of the limber engages the end of the pole of his carriage in the pole ring of the

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neck yoke and then hitches the near wheel horse; the cannoneer posted nearest the right wheel of the limber hitches the off wheel horse. The traces nearest the pole are fastened first.

To Unhitch.

438. 1. **Drivers,** 2. **UNHITCH.**

Each wheel driver dismounts, if mounted; detaches the traces of his near horse, beginning with the outer one; passes around the rear of the carriage at double time and detaches those of his off horse in like manner; passes between his horses, disengages the pole from the pole ring of the neck yoke, and lowers the pole to the ground. He then mounts, if mounted when the command was given; or stands to horse, if dismounted.

The ends of the traces are passed over the horse's back behind the saddle or are secured to the breeching body, as may be directed by the instructor.

439. If cannoneers be present the instructor may command: 1. **Cannoneers,** 2. **UNHITCH.** The cannoneer posted nearest the left wheel of the limber unhitches the near wheel horse, disengages the pole of his carriage, and lowers it to the ground. The cannoneer posted nearest the right wheel of the limber unhitches the off wheel horse. The outer traces are disengaged first.

The ends of the traces are secured as prescribed in the preceding paragraph.

To Dismiss the Drivers.

440. The drivers being in line of pairs, teams, or sections, at stand to horse, with teams unhitched and traces unhooked: 1. **By the right (left, or, right and left),** 2. **FALL OUT.**

If in line of pairs the movement is executed by each pair as prescribed for each rider in "The Soldier Mounted" (**259**).

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If in line of teams or sections the leading driver on the right executes the movement as before, being followed at 1 yard by the remaining drivers of his team or section. The movement is then successively executed by the remaining elements of the line.

If the instructor commands: **FALL OUT**, each driver leads his pair directly to its stall or to its place for unharnessing.

441. As soon as the drivers have secured their horses at the place for unharnessing, the instructor commands: **UNHARNESS**; or, 1. **By detail**, 2. **UNHARNESS.**

The harness is removed, cleaned, and properly put in place; the horses are rubbed down and cared for. Having satisfied himself by inspection that these duties have been properly performed and that all the precautions required on return from exercise have been observed, the instructor causes the harness to be covered. The men fall in, and are marched to the battery parade ground, and dismissed.

Management of the Pair.

442. The near horse is managed as explained in "The Soldier Mounted"; the off horse by the bridle reins and the whip. The voice, used quietly in connection with the whip and the aids, is of especial service to the Field Artillery driver in the management and control of his pair.

443. The whip is habitually used in driving Field Artillery teams. However, it will cause much harm and little good unless drivers are thoroughly instructed in and made to understand its correct use. It must never be used with a full-arm swing and never about the head or neck. It should be applied by a simple motion of the wrist, and, like the leg aids, should commence with mild, gentle taps which are gradually increased

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in their severity until obedience is obtained, when its action must cease. If applied in such manner as to cause the horse to jump or jerk into the collar, it becomes a fruitful cause of sore shoulders, broken harness, and balky horses. The horses should not be afraid of the whip. A reliable indication that a pair has been driven by a soldier who understands the proper use of the whip is that the horses permit head, ears, and neck to be stroked with it, and show no sign of nervousness or fear when it is brandished around their heads or over their necks.

The whip, applied by gentle taps on the left shoulder of the off horse, should cause him to move his forehand to the right; applied on the right shoulder, it should cause him to move his forehand to the left; applied on the near side slightly in rear of the place for a rider's leg to act, it should cause him to move his haunches to the right; applied similarly on the off side, his haunches should move to the left; applied behind the saddle, on the croup near the right hip, it should cause him, while remaining close to his mate, to move straight to the front.

While driving, the whip is habitually carried hanging from the right wrist. At ceremonies it is carried so as to point obliquely to the left front over the driver's left forearm.

Drivers must be forbidden to use the lash of the off bridle as a whip.

444. The voice, because it is independent of the sensibility of the horse's mouth and sides, because its signals are quickly learned, easily recognized, and smoothly obeyed by the horse, and because it requires no great amount of skill in its correct use, is an aid of great value to the driver.

Like the other aids, it must cease to act when obedience to it has been obtained. It must be reserved for occasions when it is needed to produce a definite effect. Monotonous and continuous use soon render it meaningless.

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It is proper to make use of the voice in the following ways:

(*a*) A low, quiet chirrup or cluck, in connection with the aids and the whip, to attract attention and move the horses to the front or to increase their gait.

(*b*) A low, quiet **whoa** used in connection with the rein and leg aids to steady the horses, to decrease their gait, or to stop them.

(*c*) Gentle, quiet, reassuring tones to calm a horse when frightened or when patting his neck or otherwise rewarding him. Used with the chirrup or cluck at the moment a pair shows a disposition to hesitate or stop, they are the best possible aid in encouraging them and keeping them in the collar in a heavy or difficult pull.

(*d*) A harsh, angry, scolding tone shouted at a horse when he is doing something wrong, for example, kicking. So used, the voice frightens or startles him and makes him stop his wrongdoing.

Shouting or yelling, except as indicated in (*d*), must not be tolerated in the management of horses.

445. The bridle reins of the off horse are used in gathering him, for steadying him, for checking his gait, for halting him, and for reining him back. They are habitually carried in the left hand, so held as to mantain gentle contact.

When necessary to use the bridle reins of the off horse with some force, the driver draws them toward his right thigh, using his right hand, still holding the lash in his left hand. The roller, fastened to the saddle, changes the direction of the force applied and serves to transmit an equal tension to both reins. Unless the off horse is well trained and prompt in conforming to the movements of the near horse, the driver must frequently make use of the direct rein in controlling him; thus, he may reach over and feel the right rein in order to turn his head to

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the right and induce him to step into a turn in that direction. The coupling rein may properly be used to lead the off horse into a turn to the left, but it must never be used to check his gait. Its use for this purpose has the effect of pulling the head in, preventing the horse from traveling squarely, and causing galls and injuries on his outside shoulder. Off horses that are too free and have the tendency to rush forward until the head and neck are drawn in by the coupling rein are most easily and effectively driven on a short coupling rein and the right direct rein. For this purpose the bridle rein as issued should be replaced by one made so that it may be passed from the right ring of the snaffle up through the roller and thence to the left ring of the snaffle.

446. Both horses should be gathered before moving from a halt, before halting, and before changing gait or direction, the near horse as explained in "The Soldier Mounted" (**297**), the off horse by a slight pressure or a slight additional pressure on the bit. The near horse is then required to move in the desired manner or to halt, while the off horse, by the use of the reins, whip, or voice, as may be necessary, is made to conform to the movement. By kind and gentle treatment the two horses must be accustomed to work together evenly and to effect changes of gait and direction simultaneously. The off horse must neither crowd the near horse nor travel too widely from him. In all movements involving a change of direction the horse on the outside of the turn, having the longer circumference to pass over, must quicken his movements slightly; but in order that when hitched the draft during the turn may be kept as even as possible he should be held behind the inside horse and be brought abreast of him only when the turn has been completed and the straight-ahead movement in the new direction begun. The

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driver causes the horse on the inside of the turn to move over the arc of a circle whose radius is 6 yards.

447. Drivers are instructed in managing and maneuvering a single pair before their training with teams hitched and in draft is begun. The instructor, employing commands similar to those used in "The Soldier Mounted," causes the drivers to move their pairs forward, to the flank, to the oblique, or the about; to execute changes in gait, or to halt; to align themselves; to pass from line to column or column to line; to rein back; to execute circles; to side step; in short he causes them to execute any movement (**212**) which in his judgment is of value in teaching the driver and in giving him practice in the control of his pair.

448. The next step is to form the drivers in column of three or four pairs, with traces unhooked, and to teach them the commands and movements they are to obey and execute when the team is hitched and maneuvered as a section. In this instruction the drivers are frequently changed about so as to drive, lead, swing, or wheel pairs, thus teaching them responsibility for guides, distances, and intervals, and impressing upon them the necessity for attentive cooperation in order to develop intelligent and efficient teamwork. This is a most favorable formation for teaching all the movements employed by a section as a part of "The Battery Mounted," together with the commands and signals therefor.

449. This instruction by pair is then followed by the same exercises with traces hooked but with teams unhitched. It is ruinous to draft efficiency, and spoils the training of draft horses when a driver is hesitating, uncertain, or ignorant of a movement, since this leads him to start or check his pair, to swerve this way or that, or otherwise to work against or interfere with the other drivers in his team. It is therefore of

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utmost importance that drivers, while undergoing instruction prescribed in this and the preceding paragraphs, learn and become thoroughly familiar with every movement used by the section in "The Battery Mounted." When this is accomplished and when they thoroughly understand how to direct and hold their horses in a turn, and how to direct and control them in limbering, the drivers are ready to take up the management of their horses in draft.

Teams and Their Management in Draft.

450. The mobility of a battery of Field Artillery depends to a great extent upon its draft efficiency. This can be attained only by a thorough understanding and a correct application of sound principles on the part of officers, noncommissioned officers, and drivers. If the driving is not good, neither quick maneuver, long marches, nor efficient transport service can be assured.

Teaming of Artillery Horses.

451. The weights behind teams are established on the assumption that each horse does his full share of the work. This is impossible unless the driving is of a high order; such driving is very greatly facilitated by a careful teaming of the horses. Horses possessing uniformity in temperament, gaits, size, and conformation, which can come only with a high degree of uniformity in breeding, represent the ideal which a battery as a whole is unable even to approximate. In any battery, however, the individual teams may be made up with a fair degree of uniformity in the qualities mentioned.

To place for instance an active, ambitious, and impetuous horse in a team of slower moving, more phlegmatic animals is greatly to impair the efficiency of all; uneven draft results; the

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free horse is either overburdened or is fretted and taught to be a quitter, while his driver is handicapped, overworked, and exasperated.

The first consideration in teaming horses is uniformity in gait. This usually also means a satisfactory degree of uniformity in temperament. At their natural walk and trot the six or eight horses selected for a team should cover as nearly as possible the same distance in a fixed length of time. Having selected the team in this manner the horses are then paired with regard to, first, activity and temperament; second, size (height, then weight); third, conformation. The pair that is most active, or that has the freest, most willing, and most responding temperament should go in the lead; that which shows these qualities to the least degree, in the wheel. If activity and temperament afford no choice in placing the pairs, the blockiest or heaviest pair should go in the wheel and the tallest or lightest pair in the lead.

Matching for color, though desirable for the sake of appearance, is the last consideration in teaming horses to obtain draft efficiency.

The freest moving team should be assigned to the first-section piece, the next freest to the first section caisson, the next to the second section piece, and so on throughout the battery. Then if the first section leads there will be a slight but uniform tendency throughout the battery to lose distance, while if the last section leads there will be a slight tendency to crowd.

As a general principle, horses under 7 years of age should habitually be employed as off horses; also, in any pair the horse of the better saddle conformation should be the near horse, and the freer driver the off horse. However, in any team the horses should be interchanged in order that they may be trained

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to work willingly in lead, swing, or wheel, and as the off or near horse in the pair.

To Start a Carriage or to Increase its Speed.

452. In all movements from a halt or in changing gait or direction, each driver gathers both of his horses before applying the aids or giving the signals which they are to obey.

In starting a carriage it is desirable that all the horses of the team simultaneously apply power in the collar. Though this is extremely difficult, since three or four drivers can not usually start six or eight horses at the same instant, the endeavor to do so should always be made. A good start is rendered more certain if the traces are reasonably well stretched before the team is called on to move. In stretching the traces, however, a driver must be careful not to permit his horses to bump into the collar, because such a practice tends to make them think that a bump on the shoulder means to stop. A good start is rendered certain if every horse steps slowly into the collar and holds there, quietly straining at his task until the slower horses in the team overtake his motion and add sufficient strength to move the carriage. A gradual start, then, becomes of greater practical importance than a simultaneous start. Chiefs of section and drivers have a constant tendency to start off too quickly. This evil is aggravated if the comand for starting has been loud, sharp, and abrupt rather than low and prolonged. A good start is facilitated if the command of execution habitually follows the preparatory command at a fixed interval.

At the preparatory command each driver gathers his horses; at the command of execution he applies the proper aids to the near horse, touches the off horse, if necessary, with the whip, and speaks to both horses with a low cluck or chirrup, causing

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them to respond promptly by stepping slowly into their collars and straining until the carriage moves.

The same principles apply in increasing the speed of the carriage by passing to a faster gait. Abruptness or suddenness of movement is to be avoided.

Drivers must appreciate the necessity for cooperation, and each one must be constantly attentive to what the others in the team are doing. Each should regulate his movements on those of the pair ahead of him; the wheel driver especially must be careful that his pair does not lag behind or attempt to start the carriage alone. As an example, for the wheel driver to have his horses in the breeching when the others are in the collar is inexcusable.

When, for an unexpected reason, a driver must stop his pair or can not start it at the command he must give a warning call to the others.

To Stop a Carriage or Reduce its Speed.

453. To the same degree that effort is made to avoid abrupt or sudden starts, so also should effort be made to avoid abrupt or sudden stops or reductions in speed. In stopping the carriage the drivers hold their horses out of traction and stop with the gradual stopping of the carriage. The wheel driver may, when desirable, assist in stopping the carriage by holding his horses back in the breeching. The brake, if carefully and gradually applied so as not to jerk the horses, is of great use in stopping the carriage or checking its speed. The lead and swing drivers regulate the movement of their pairs by those of the wheel pair, keeping out of the way, but avoiding any strain on the traces.

To Back a Carriage.

454. The wheel driver is responsible for backing the carriage. The other drivers must give him complete liberty of

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trace. Both horses are reined back together, quietly and steadily according to the principles outlined in "The Soldier Mounted" (307).

Turns.

455. Turns are made to the right or left through angles of 45° (the oblique), 90° (by the flank), or 180° (the about). In all of these turns the lead driver directs his pair so that the horse on the inside of the turn moves over the arc of a circle whose radius is 6 yards. It is desirable that all the horses of the team remain in draft during the turn. When this is the case there is a constant tendency for the line of traction to become the chord of the circle over which the lead driver is moving, and for all horses to make the turn on two tracks on the haunches. In order that the turn may not be too short, forcing some of the horses to step directly to the side and perhaps step on each other or knock their legs, all drivers must combat this tendency by keeping their horses directed toward the outer circumference of the turn. This is accomplished in a satisfactory manner if each driver keeps his horses set and going as if to make his horse on the inside of the turn move up between the horses of the pair next in front. In this manner each pair will describe a circle which is only slightly smaller than that described by the pair next in front; the abruptness of the turn on the haunches will be reduced and the turn rendered easier.

If the outside horses were held accurately abreast of the inside ones during the turn, the only trace in draft would be the outer one of the outside lead horse. To avoid this and to keep all the horses in draft, it is necessary for the lead and swing drivers to hold their outer horses a greater or less distance behind the inner ones. The amount of this depends upon the radius of the turn and the position of the pair in the team. It

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is greatest with the lead pair, and diminishes progressively with each pair to the rear. In the wheel pair, however, the outside horse should be ahead of the inside horses as much as is allowed by the doubletree. The horses are brought abreast of each other only when the turn is completed and the whole team straightened in the new direction.

In executing the turns at an increased gait the radius is sufficiently increased to permit the horses to execute the movement with ease and the gait is moderated when necessary to avoid overturning the carriages.

The Turn in Limbering.

456. As the team arrives in close proximity to the carriage to be limbered it moves at a walk, at the command, when necessary, of the lead driver. The lead and swing drivers hold their horses back so that the wheel driver has complete liberty of trace. As the lead driver passes the lunette he starts to move his pair so that the inside horse passes over the arc of a small half circle, radius approximately 3 yards, diameter in continuation of the trail of the carriage. The other drivers advance to make the turn on exactly the same ground, the whole team moving so that the limber wheel will pass within about 1 foot of the lunette. When the axle of the limber is nearly in line with the trail the wheel driver commands: **1. Team, 2. HALT.** At this command the lead driver slowly straightens his pair in direct prolongation of the trail, and the swing and wheel drivers follow his movements by slowly passing their horses toward the same line. When the horses are straight on this line the turn, if properly made, should have placed the pintle of the limber in prolongation of the trail. The wheel driver then backs the limber as much as may be necessary to permit limbering.

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Throughout the movement it is essential that the traces of the lead and swing pairs remain loose. They are stretched out the moment the limbering is completed.

To Confirm in Horses a Willingness to Pull.

457. Almost any horse can be trained to be an honest and willing puller. Through ignorance, lack of judgment, bad management, or laziness on the part of the driver he can far more easily be trained to be a shirker and a quitter. A horse will not pull freely or willingly if to do so causes him pain. It is essential, therefore, that his harness, especially his collar, fit him with absolute comfort; that his shoulders be hardened through careful conditioning and rational work and are therefore not tender or sore; and that he apply his weight in the collar slowly and gradually, without sudden starts or jerks that would pound and bruise his shoulders. Even though all of the above conditions be favorable, a horse will not pull unless he is confirmed in the belief that when he applies his strength the load behind him will yield. Thus a willing horse may be hitched to an immovable object and within a few minutes, especially if he be yelled at or whipped, be transformed into a sulker and a balker that only long, patient, and careful handling will cure. To allow repeated trials and failures in pulling is the quickest and most effective method of ruining the draft efficiency of any team. It must be borne in mind that there is a limit to the draft power of any Artillery team and that this power, due to the tandem method of hitching, is, even with perfect driving, from 20 to 50 per cent less than the sum of the powers of the individual horses. A team should never be given deliberately a task that is clearly beyond its strength. It is right and proper, in order to train a team and to develop its draft power to a

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maximum, to give it from day to day or week to week tasks that gradually increase in difficulty. Such tasks will occasionally stop the team. No evil results will follow if the animals, when so stopped, are permitted to rest quietly for a few minutes and recover their wind. The first tendency of the inexperienced noncommissioned officer or driver when a team stops is to urge it forward immediately. This is exceedingly wrong. The horses are either taking an absolutely needed rest or are showing by their action that they need assistance. While the horses are resting a sufficient number of cannoneers with drag ropes should be brought up so that when the signal to move is given the carriage will certainly move. Such a practice trains the horses that there is no such thing as failure or defeat in a pull and therefore confirms a willingness to pull whenever they are called upon to do so. A team so trained may, when it has become hardened to its work, be called on to make the attempt to pull out of a difficulty unaided unless such a task is clearly beyond its strength. However, if the attempt fails it must be appreciated that the team to a certain extent has been injured and that for some time to come it must not again be subjected to the risk of failure. A team, trained and managed in accordance with these principles, can always be counted on to occasion a minimum of delay to a battery which encounters difficulties in transport.

Driving up Steep Slopes and Over Difficult Ground.

458. In order to exert his maximum strength when in a difficult pull, the draft horse must get the greatest possible weight forward and into the collar. By maintaining a low, extended, and advanced carriage of the head and neck he is able to add considerably to his power of traction. He should,

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therefore, be allowed full freedom of rein when in a heavy pull and not be forced to fight the driver's hand. Because a horse can exert a greater power of traction when ridden, it is often advantageous when in a difficult pull to mount cannoneers on the off horses. When pulling up a hill the drivers should lean well forward and should encourage their horses by a low and quiet use of the voice.

The most favorable gait for heavy pulling is a steady, uniform walk, with every horse straight in his collar and the team straight from lead to wheel. The tendency to rush a hill or other difficult pull must be avoided. Any increase of speed for such a purpose can not be taken up with perfect uniformity by all the horses of a team and the footing for each horse is rendered more uncertain and difficult. This causes undue weight to come upon the shoulders of some while none at all may be borne by others. Uneven draft quickly results, often to the point of stalling the team. In going over a V-shaped ditch unusual effort should be made to keep the horses at a steady walk. In such a place the brake must be used with great care, so that the traces will be tight and the horses in draft during the entire crossing. The brake should be released a little too late rather than too soon, for, in the latter case, the carriage rushes forward into the bottom of the ditch, where it stops, and the horses on again coming into draft are given a violent jerk.

When maneuvering off the road, steep ascents should be taken in line to avoid checks. When on a road or track, if circumstances permit, the battery should be halted at the foot of the hill and carriages or sections sent up at about one-minute intervals. This gives opportunity for the teams to be halted to rest and blow at the top, or, if the hill be a long one, to be halted a number of times during the ascent. Each carriage or section,

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after such a halt, moves out in time for the carriage or section which follows to halt on the same ground. Cannoneers, instructed to follow and watch a carriage in difficult draft, may, by applying their strength at the moment a stop seems imminent, prevent the carriage from stalling.

When a carriage has been stalled it may, in some cases, be found best to have cannoneers first back it for a few feet, in order to put both horses and carriage on more advantageous ground from which to make the start.

459. Cannoneers should be instructed and regularly practiced in assisting the horses by working at the wheels and along ropes attached to the carriages. Much delay and confusion on the march may be avoided by such training. To avoid interference and to insure teamwork, attention should be given to the spacing of the men along the rope. Ropes may be attached in the following ways:

(*a*) **For ordinary pulls.**—By a running bowline or a clove hitch around the trail of the carriage, well back near the breech of the gun.

(*b*) **For a short, hard pull, as in lifting a carriage out of a ditch.**—By a wheel purchase. To use a rope as a wheel purchase: With one end a turn is taken around the felloe as near as possible to the ground; the rope is placed over the short end so as to hold it against the tire. and is then laid on the tire and passed over the wheel to the front. The rope should be so placed around the felloe that it may be pulled clear of the wheel when the short end is released by the turning of the wheel. Should the wheel slip, a rope may be wound around the felloe and tire, with turns about a foot apart to enable the wheel to get a grip.

(*c*) **For use without teams or when it is desired to use the team in advance of its regular place.**—By passing the hook end

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of one rope and the ring end of another under the doubletree on opposite sides of the pole, and hooking together above the pole in rear of the doubletree. With each rope a half hitch is taken around the pole near its end. These ropes may be extended to any desired length by others, and either attached to a limber, in case it is desired to use a team, or used with cannoneers. This method is useful in crossing dangerous bridges and on steep slopes where horses can not get good footing or can not maintain uniform draft.

460. When a carriage is mired it may be pulled out by attaching it with ropes to the middle point of a log or balk. Each end of this balk is attached to the pintle of a limber. A full or extended team is hitched to each limber. The balk acts as a giant doubletree between the two limbers, and with careful driving the draft will be very even.

461. The start of a stalled carriage may at times be facilitated by turning the pole either to one side or the other as far as it will go and straightening the team in that direction. In this way the first effort of draft serves only to turn the mass of the weight about a vertical axis, with the trail as the lever arm. The yielding obtained in this way encourages the horses and brings the total weight into their collars more gradually.

462. In a heavy pull a driver should always watch the traces in front. Should they become loose, he very gradually holds his own pair back until they tighten up and the horses to the front again come in draft. The whole team may then, if necessary, be urged forward a little faster. This method insures all the horses coming into draft without the jerk, so disconcerting to the whole team, that frequently results when a pair is brought into draft by being urged forward at increased speed.

463. Carriages should be driven squarely across sunken roads, ruts, narrow ditches, etc., so as to avoid whipping the pole.

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